Vol. 908 Number 1

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

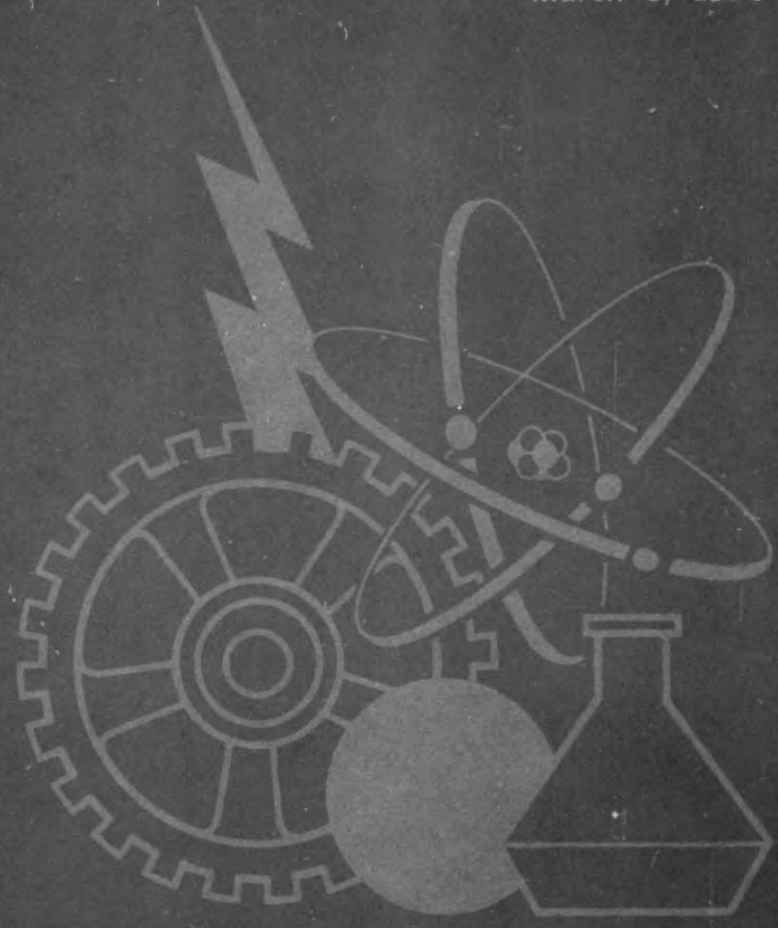
OFFICIAL GAZETTE

of the

UNITED STATES PATENT OFFICE

PATENTS

March 6, 1973



U. S. DEPARTMENT OF COMMERCE

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

March 6, 1973 Volume 908 Number 1

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PATENT NOTICES

Certificates of Correction for the Week of Mar. 6, 1973

Re. 27,393	3,660,676	3,679,354	3,692,721
Re. 27,506	3,660,913	3,679,445	3,692,776
D. 224,038	3,661,630	3,679,466	3,692,801
3,443,997	3,661,952	3,679,701	3,692,943
3,515,875	3,661,959	3,679,840	3,692,965
3,545,360	3,661,993	3,679,870	3,693,200
3,554,278	3,663,009	3,679,977	3,693,245
3,586,901	3,663,634	3,679,982	3,693,322
3,599,131	3,664,238	3,680,254	3,694,430
3,599,463	3,665,424	3,680,274	3,694,500
3,609,297	3,665,588	3,680,283	3,694,536
3,612,440	3,665,901	3,680,587	3,694,552
3,613,678	3,666,446	3,680,591	3,694,649
3,613,733	3,666,450	3,681,179	3,694,816
3,614,171	3,666,565	3,681,204	3,694,817
3,615,213	3,666,863	3,681,420	3,695,056
3,615,439	3,667,282	3,681,439	3,695,230
3,615,443	3,667,444	3,681,685	3,695,360
3,615,573	3,667,602	3,681,855	3,695,688
3,618,091	3,668,193	3,682,031	3,695,695
3,620,272	3,668,693	3,682,087	3,695,768
3,622,917	3,669,938	3,682,320	3,695,894
3,624,530	3,670,111	3,682,630	3,695,995
3,625,052	3,670,462	3,682,939	3,696,302
3,625,512	3,670,672	3,682,988	3,696,503
3,626,130	3,671,214	3,683,051	3,696,808
3,627,922	3,671,238	3,683,371	3,696,937
3,628,410	3,671,514	3,683,817	3,696,988
3,628,626	3,671,782	3,684,041	3,697,180
3,629,169	3,671,847	3,684,116	3,697,552
3,630,549	3,671,942	3,684,548	3,697,607
3,632,188	3,672,676	3,684,549	3,697,684
3,632,358	3,672,740	3,684,784	3,697,687
3,632,550	3,672,817	3,684,948	3,698,002
3,632,568	3,672,969	3,685,308	3,698,330
3,633,169	3,673,080	3,686,016	3,698,422
3,634,661	3,673,219	3,686,048	3,698,564
3,635,724	3,673,255	3,686,130	3,698,722
3,636,237	3,673,399	3,686,289	3,698,872
3,637,367	3,673,544	3,686,715	3,698,926
3,637,436	3,674,095	3,687,056	3,698,974
3,637,669	3,674,454	3,687,514	3,699,050
3,638,111	3,674,561	3,687,555	3,699,087
3,640,393	3,674,680	3,687,906	3,699,167
3,641,061	3,674,799	3,687,919	3,699,440
3,642,581	3,675,186	3,688,010	3,699,541
3,643,122	3,675,563	3,688,235	3,699,542
3,644,454	3,675,654	3,688,279	3,699,821
3,644,873	3,675,980	3,688,565	3,700,340
3,647,193	3,676,097	3,688,875	3,700,365
3,647,249	3,676,113	3,689,001	3,700,497
3,649,826	3,676,205	3,689,166	3,700,637
3,651,579	3,676,478	3,689,470	3,700,684
3,654,258	3,676,695	3,689,499	3,700,691
3,654,736	3,676,714	3,689,535	3,700,695
3,655,999	3,676,783	3,689,554	3,700,706
3,656,104	3,677,009	3,689,603	3,701,114
3,656,114	3,677,725	3,689,611	3,701,129
3,656,301	3,677,747	3,689,677	3,701,292
3,656,354	3,677,755	3,690,364	3,701,411
3,657,179	3,677,920	3,690,434	3,701,412
3,658,269	3,678,187	3,690,749	3,701,640
3,658,636	3,678,549	3,691,186	3,701,806
3,658,701	3,678,672	3,691,308	3,702,018
3,658,901	3,678,887	3,691,521	3,703,508
3,658,948	3,678,998	3,691,797	
3,659,285	3,679,025	3,692,486	
3,660,440	3,679,324	3,692,540	

Disclaimers

3,453,356.—*Raymond W. Kent, Jr.* and *Kenneth R. Hock*, Midland, Mich. MIXING OF FILAMENTARY REINFORCING MATERIAL WITH THERMOPLASTIC RESINS. Patent dated July 1, 1969. Disclaimer filed May 24, 1972, by the assignee, *The Dow Chemical Company*.

Hereby enters this disclaimer to claims 1–4, inclusive, of said patent.

3,527,892.—*Jurgen Kok*, Bedford, Mass. AUTOMATIC ALARM SYSTEM. Patent dated Sept. 8, 1970. Disclaimer filed Dec. 7, 1972, by the assignee, *DASA Corporation*, consenting.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,011,016, E. M. Roschke, SUBSCRIPTION RECEIVER, decided July 28, 1967, Interference No. 94,050, claim 27.

Patent No. 3,284,423, E. C. Knapp, PRESSURE-SENSITIVE CREEP-RESISTANT RESIN COMPOSITION, decided March 16, 1970, Interference No. 96,664, claims 1, 2, and 8.

Patent No. 3,299,389, A. A. Vercesi and R. R. Segerdahl, VARIABLE RESISTANCE POTENTIOMETER OF THE TYPE HAVING A CONDUCTIVE PLASTIC TRACK ON AN ELECTRICALLY INSULATING BASE, decided July 27, 1961, Interference No. 97,036, claims 1 and 2.

Patent No. 3,321,449, H. A. Vogel, POLYBICYCLOARYLSULFONES, decided November 24, 1971, Interference No. 96,500, claims 1 to 9.

Patent No. 3,324,051, J. Lal, POLYMERIZATION OF EPOXIDES AND EPISULFIDES, decided May 20, 1970, Interference No. 96,813, claims 1, 2, 3, 5, 8, 9, 10, 12, 14, 15, 18, 19, and 20.

Patent No. 3,329,920, A. A. Vercesi and R. R. Segerdahl, VARIABLE RESISTANCE POTENTIOMETER, decided June 27, 1971, Interference No. 97,035, claim 3.

Patent No. 3,436,622, R. M. Warner, COMPOUND CHANNEL INSULATED GATE TRIODE, decided September 19, 1972, Interference No. 97,185, claims 1 to 6.

Patent No. 3,461,375, W. Nestler and E. Kallenback, CIRCUIT ARRANGEMENT FOR TWO-STAGE ENERGIZATION OF LOAD, decided February 29, 1973, Interference No. 97,420, claims 1, 2, 3, 4, 5, 6, and 8.

Patent No. 3,622,709, G. S. Tjaden, SUPERVISORY CIRCUIT FOR TELEPHONE LINES, decided Dec. 22, 1972, Interference No. 98,021, claim 7.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 20, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	12-16-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-03-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	9-20-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-21-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-01-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	7-03-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-31-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-03-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	12-03-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-27-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	5-26-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-03-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-03-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-10-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-06-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	10-26-71

Expiration of patents: The patents within the range of numbers indicated below expire during March 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,736,898 to 2,740,116, inclusive
Plant Patents..... Numbers 1,457 to 1,466, inclusive

REISSUES

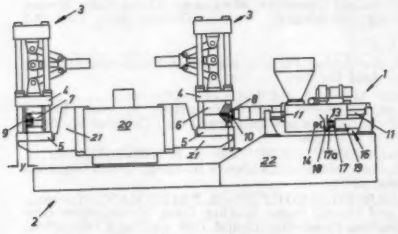
MARCH 6, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,590
CONTROL DEVICE FOR INITIATING THE INJECTING PROCESS OF INJECTION MOLDING MACHINES

Manfred Niklarz, Rintein, Germany, assignor to Stubbe Maschinenfabrik G.m.b.H., Kalletal-Kalldorf, near Vlotho, Germany

Original No. 3,566,445, dated Mar. 2, 1971, Ser. No. 742,352, July 3, 1968. Application for reissue July 27, 1971, Ser. No. 166,647
Claims priority, application Germany, July 5, 1967, P 15 83 702.2
Int. Cl. B28b *17/00*
U.S. Cl. 425—149 4 Claims

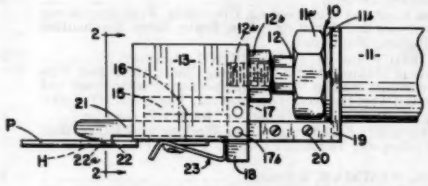


A control device for initiating the injection step of an injection molding machine cycle, wherein the injection nozzle and the mold are moved toward and pressed against each other by means of a feed unit.

27,591
TOOL FOR ASSEMBLING SPRING METAL C-CLIPS TO PANELS

Robert A. Munse, Troy, Mich., assignor to Microdot Inc., New York, N.Y.

Original No. 3,501,827, dated Mar. 24, 1970, Ser. No. 673,608, Oct. 9, 1967. Application for reissue Nov. 9, 1970, Ser. No. 87,768
Int. Cl. B23p *19/04*
U.S. Cl. 29—225 11 Claims



A tool for applying spring metal C-clips having a nut in one arm to an apertured panel has a power operated reciprocal ram provided with a head to which a clip is applied in such position that when the ram advances the clip is forced over the edge of the panel, the arms of the clip opening to engage opposite faces of the panel. The tool has a locator arm which has a hook at its outer end to engage in a hole in the panel to guide the ram operation and cause the clip to be properly positioned with its nut in alignment with the panel hole.

27,592
NOVEL PROCESS FOR THE PREPARATION OF TRANS-CHRYSANTHEMUMIC ACID

Jacques Martel, Bondy, Chanh Huynh, Le Raincy, Edmond Toromanoff, Paris, and Gerard Nominé, Noisy-le-Sec, France, assignors to Roussel-UCLAF, Paris, France

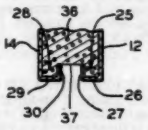
No Drawing. Original No. 3,445,499, dated May 20, 1969, Ser. No. 454,691, May 10, 1965. Application for reissue Mar. 22, 1971, Ser. No. 127,019
Claims priority, application France, May 26, 1964, 975,870, 975,871
Int. Cl. C07c *147/06, 148/08, 51/09*
U.S. Cl. 260—464 11 Claims

A novel process for selectively producing d,l-trans chrysanthemumic acid which has the same configuration as the naturally occurring said acid which is useful as an intermediate for pyrethreum esters widely used as insecticides and to novel intermediates formed therein.

27,593
FOAMED CORE LAMINATED STRUCTURE AND METHOD

Frederick V. Gondeck, Lester E. Hickox, Thomas E. Kennedy, Arthur Perez, and James F. Thompson, Niles, Mich., assignors to Clark Equipment Company

Original No. 3,432,378, dated Mar. 11, 1969, Ser. No. 421,291, Dec. 28, 1964. Application for reissue Apr. 5, 1971, Ser. No. 131,202
Int. Cl. B32b *3/02, 3/30*
U.S. Cl. 161—44 9 Claims



A laminated core construction utilizes a supporting frame or form when inserting plastic material between two opposed, supported facings. The supporting form has a blocking means to form the edge construction between the facings that bends the ends of the facings to form two side-by-side channels. The blocking means, which is removed after setting of the core, extends between the two channels to form a generally U-shaped end portion with the laminated core structure providing the only connecting means between the two opposed facings.

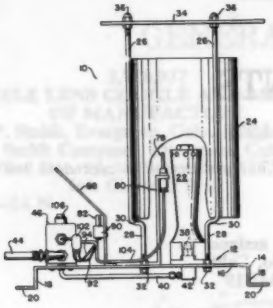
27,594
TIP-OVER SHUT-OFF FOR GAS HEATERS

Gerard L. Power, Dearborn Heights, Mich., assignor to Insto-Gas Corporation, Detroit, Mich.

Original No. 3,314,411, dated Apr. 18, 1967, Ser. No. 458,219, May 24, 1965. Application for reissue June 23, 1971, Ser. No. 156,043
Int. Cl. F23n *5/24;* F24c *3/12*
U.S. Cl. 126—85 R 6 Claims

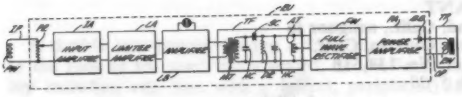
A portable heater assembly having a gas burner. A valve in the gas line to the burner is normally held open by an electromagnet when the burner is operating. A

mercury switch is operative to deenergize the electromagnet in response to tipping of the heater assembly from



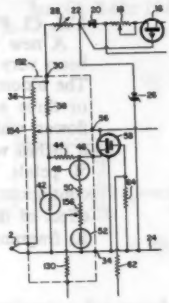
upright position, whereupon the valve is closed by a spring to shut off the burner.

27,595
FREQUENCY-SHIFT TELETYPEWRITER
Robert H. Weitbrecht, Redwood City, Calif., assignor to R. H. Weitbrecht Company
Original No. 3,507,997, dated Apr. 21, 1970, Ser. No. 574,217, Aug. 22, 1966. Application for reissue Apr. 5, 1972, Ser. No. 241,463
Int. Cl. H04b *1/38*
U.S. Cl. 178—66 R **13 Claims**



A transmitter and receiver are disclosed for a teletypewriter. The frequency-shift receiver responds to mark-frequency signals above a predetermined threshold to reduce the gain of the receiver during mark intervals, so that the receiver will not respond to spurious space-frequency signals, e.g., echoes. This is accomplished by a limiter amplifier in conjunction with a filter tuned to the space-frequency.

27,596
TWO-WIRE MV./V. TRANSMITTER
Edward T. E. Hurd III, Cinnaminson, N.J., assignor to Honeywell Inc., Minneapolis, Minn.
Original No. 3,562,729, dated Feb. 9, 1971, Ser. No. 670,822, Sept. 8, 1967. Application for reissue May 10, 1971, Ser. No. 141,736
Int. Cl. G08c *19/04*
U.S. Cl. 340—210 **11 Claims**



There is disclosed a voltage (millivolts)-to-current transducer which transmits a current signal to a remote central station, which includes a power supply for a utilization device at the remote location, over a two-wire transmission line. The transmission line carries both the signal current from the transmitter to the remote station and the total power supply for the transmitter.

PLANT PATENTS

GRANTED MARCH 6, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,314
ROSE PLANT
David L. Armstrong, Upland, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.
Filed Apr. 15, 1971, Ser. No. 134,519
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—20 **1 Claim**

A new variety of rose of the hybrid tea class which bears very large blooms on strong, medium-length stems. The blooms are usually borne singly, but sometimes two or three appear on a stem in an irregular cluster. The flower, which is of double petalage, may span as much as 6 inches when fully open, and may contain as many as 50 petals. The plant blooms freely outdoors and nearly continuously during the growing season. The general color effect of the newly opened flower is strong purplish red. Its fragrance is a moderate to strong damask.

3,315
ROSE PLANT
David L. Armstrong, Upland, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.
Filed Apr. 15, 1971, Ser. No. 134,518
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—22 **1 Claim**

A rose plant of the floribunda class which bears blooms that are large for this class, on normal medium-length stems. Most blooms occur in irregular clusters of three to four, or more, flowers, although some blooms may be borne singly. The flower may span as much as four inches when fully open, and usually contains from 20 to 25 quite broad petals. The plant blooms freely outdoors, and nearly continuously during the growing season. The general color effect of the newly opened flower is yellow-pink and red, the yellow being notable. The fragrance is a blend of damask rose and spice, and is moderately penetrating to strong.

3,316
CARNATION PLANT
Teruo Yukawa, 1913 Hackett Ave., Mountain View, Calif. 94040
Filed July 19, 1971, Ser. No. 134,830
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—73 **1 Claim**

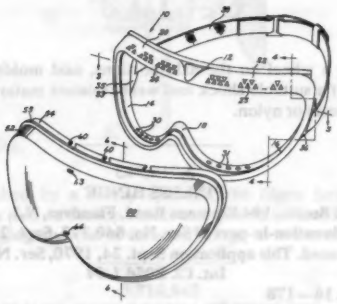
1. The new and distinctive variety of carnation plant substantially as herein described and illustrated.

PATENTS

GRANTED MARCH 6, 1973

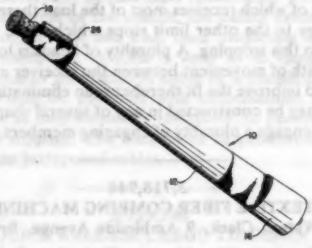
GENERAL AND MECHANICAL

3,718,937
DOUBLE LENS GOGGLE AND METHOD OF MANUFACTURE
Robert P. Smith, Evergreen, Colo., assignor to R. P. Smith Company, Evergreen, Colo.
Filed Dec. 19, 1969, Ser. No. 875,767
Int. Cl. A61f *9/02*
U.S. Cl. 2—14 N **6 Claims**



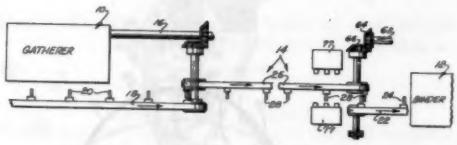
A double lens goggle, having a frame for conforming to the face of the user, has a sealed, double lens assembly including one lens with a lateral, peripheral flange having a circumferential groove into which the second lens is mounted, and the flange provides means for securing the lens assembly to the frame. A vent system provides an air flow in the air space in contact with the user's eyes.

3,718,938
COMBINED SHARPENERS FOR KNIVES AND FISH HOOKS AND HOOK DISGORGER
Mike C. Blume, Box 1125, Kissimmee, Fla.
Filed June 21, 1971, Ser. No. 154,833
Int. Cl. B25f *1/04*
U.S. Cl. 7—1 H **4 Claims**



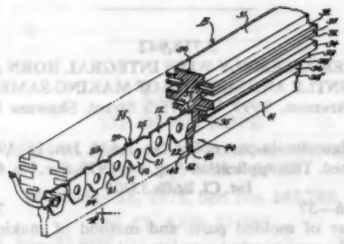
A multi-purpose hand tool including a steel honing rod which is telescopingly received with a hollow handle tube for storage, a separate fish hook sharpening member attached to the handle tube, and a groove in the outer end of the honing rod to disgorge a hook from a fish's mouth. The honing rod may also be utilized as a fish holder while the fish is being scaled by inserting the rod into the fish through its mouth.

3,718,939
GATHERER-BINDER TRANSFER SYSTEM
Henry R. Mebus, Nazareth, Pa., assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed May 14, 1971, Ser. No. 143,532
Int. Cl. B42c *19/00*
U.S. Cl. 11—1 R **11 Claims**



A transfer mechanism for transferring signatures from a gatherer to a binder with the transfer mechanism including a transfer conveyor driven in synchronism with the gatherer conveyor and the binder infeed conveyor until the gatherer stops whereupon the transfer conveyor is driven by the binder until the transfer conveyor is clear of signatures. Thereafter, the transfer conveyor automatically stops and is locked in proper timed relationship with the stopped gatherer conveyor while the binder continues operating at a constant speed whereby restarting of the gatherer enables the gatherer to come up to binder speed and be synchronized with the binder before any signatures are conveyed to the binder.

3,718,940
HEATED WIPER BLADE
Gerd B. Bode, 935 El Camino Real, San Francisco, Calif.
Filed June 24, 1971, Ser. No. 156,305
Int. Cl. B60s *1/04*
U.S. Cl. 15—250.06 **9 Claims**



A blade for window wipers and the like wherein an electrical resistance element extends therethrough for heating the

wiping lip; said electrical resistance element being characterized by a thin membrane comprised of flat plate sections joined by flexible coupling sections and thereby adapted to be independently bendable within the wiper blade body and all without distortion of said body which remains universally bendable to conform to the changing compound curvatures over which it is to wipe; and said membrane having maximum heat transfer and reinforcing features as related to the wiper blade body for a most direct and effective heat transfer to the working surface that is to be defrosted and wiped clean.

3,718,941

WINDSHIELD WIPER FOR CIRCULAR HEADLAMPS

Hans-Christian Deutscher, Ludwigsburg, and Kurt Bauer, Kleiningersheim/Wurttemberg, both of Germany, assignors to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH, Bietigheim, Germany

Filed Oct. 8, 1971, Ser. No. 187,733

Claims priority, application Germany, Dec. 3, 1970, P 20 59 527.1

Int. Cl. B60s *1/32*

U.S. Cl. 15—250.23 **11 Claims**

A windshield wiper for a circular headlamp, includes a first long wiper arm with a yoke pivotally connected to its outer end which is engageable with the wiper blade, and a second wiper arm carrying two longitudinally spaced yokes which are pivotally connected to the associated shorter arm and engage the wiper blade at longitudinally spaced inward locations. The wiper arms are oscillatable about a common pivot through separate oscillation angles with the shorter arm being operated through a longer oscillation angle range backwardly and forwardly than the longer arm so as to cause the blade moved thereby to curve around the circular frame of a circular headlight when it moves from side to side.

3,718,942

CASTER ASSEMBLY WITH INTEGRAL HORN AND PINTLE AND METHOD OF MAKING SAME

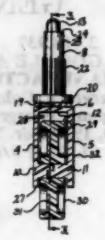
Herbert Arenson, 9999 West 75th Street, Shawnee Mission, Kans.

Continuation-in-part of Ser. No. 3,431, Jan. 16, 1970, abandoned. This application Aug. 14, 1970, Ser. No. 63,814

Int. Cl. B60b *33/00*

U.S. Cl. 16—37 **7 Claims**

A caster of molded parts and method of making same wherein the caster includes an integral pintle and horn having axle portions all molded of a plastic composition and mounting a wheel. A mounting member for supporting the pintle in a leg of furniture or the like, such as a sleeve having a flange at one end and a thickened portion at the other end for engaging a shoulder on the pintle to retain the sleeve and pintle assembled. The method includes the molding of the pintle and horn in an integral structure substantially in its final shape with the horn and arm portions thereof preferably having axle portions extending from the arms, spreading the arm portions to permit



placing a wheel on the axle portions, said molded portions being of a suitable shock and wear resistant material, such as acetal resin or nylon.

3,718,943

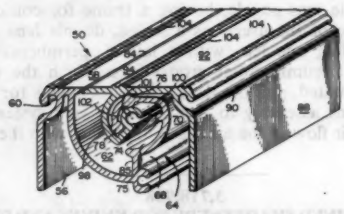
PINLESS HINGE

Leopold Bustin, 194 Emmons Road, Flanders, N.J.

Continuation-in-part of Ser. No. 860,373, Sept. 23, 1969, abandoned. This application Sept. 24, 1970, Ser. No. 74,979

Int. Cl. E05d *1/04*

U.S. Cl. 16—178 **8 Claims**



A pinless hinge wherein a spirally configured hollow receiver has engaged therein an arcuate engaging member which is movable along and in the spiral hollow of the receiver for relative swinging movement between the receiver and engaging member. The pinless hinge includes a plurality of limit stops, one of which receives most of the load thereby minimizing damage to the other limit stops which serve functions in addition to this stopping. A plurality of beads is located in the relative path of movement between the receiver and engaging member to improve the fit therebetween eliminating play. The receiver may be constructed in any of several shapes to simultaneously engage a plurality of engaging members.

3,718,944

TEXTILE FIBER COMBING MACHINES

Edward Watson Clark, 9 Ambleside Avenue, Bradford, England

Filed Sept. 11, 1970, Ser. No. 71,594

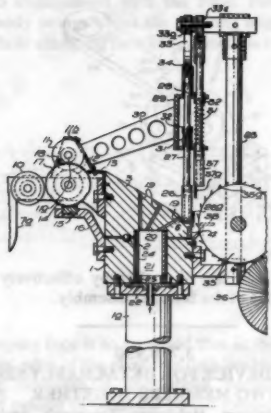
Claims priority, application Great Britain, Sept. 17, 1969, 9,755/69

Int. Cl. D01g *19/02*

U.S. Cl. 19—123 **13 Claims**

A textile fiber combing machine in which the fibers to be combed are carried at a plurality of stations around a bed-ring

on a rotary circular ring over which they are drawn and to which they are intermittently clamped by nip blocks and initially combed by a rotary cylinder, the fibers being then combed by pins on the nip blocks and given a reverse feed by a knife engaging a groove in the rotary ring.



3,718,945

SLINGS, TOW-ROPES AND THE LIKE

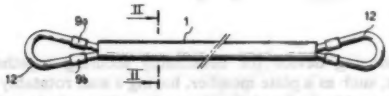
Pierre Brindejonc de Treglode, 14 rue Dailly, 92 Saint-Cloud, France

Filed Oct. 8, 1970, Ser. No. 79,205

Claims priority, application France, Oct. 13, 1969, 6935549; Sept. 16, 1970, 7034193

Int. Cl. A44b *31/00*; B66c *1/12*

U.S. Cl. 24—73 **6 Claims**



A cargo sling, tow-rope or the like comprises two cables embedded in a continuous elastomeric sheath of generally elliptical cross-section, these cables being disposed substantially in the longitudinal plane containing the major axis of the ellipse and in a substantially symmetrical relationship with the longitudinal centerline of the sheath; the cables extend beyond the sheath on at least one end, their projecting extremities being interconnected to form a loop or to engage an attachment such as an extension cable or a coupling member. The cables may be provided with deformations inside the sheath, such as undulations or shoulders, to prevent relative longitudinal slippage. The sheath can be produced by extrusion about the juxtaposed cables.

3,718,946

QUICK RELEASE CARGO TIE DOWN

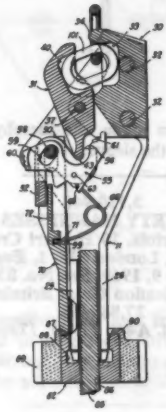
Waymond S. Lunsford, Clayton; Max W. Watts, Tiger, and Kenneth W. Mason, Clayton, all of Ga., assignors to The Aid Corporation, Clayton, Ga.

Filed Nov. 3, 1971, Ser. No. 195,204

Int. Cl. A43c *11/00*; B65d *63/00*

U.S. Cl. 24—73 HH **13 Claims**

A quick release cargo tie-down device for use in securing a link of a cargo tie-down chain in position relative to stationary anchor means. The cargo tie-down device includes a pair of block members defining opposing socket portions detailed in dimensions for receiving opposite arcuate end portions of a chain link, with the block members being movable relative to each other for operation between a closed chain link retaining position and an opened chain link releasing position. Latching lever means is operatively associated with the block members for preventing relative displacement of the block members, to thereby latch the block members in the chain link retaining position. The quick release cargo tie-down device includes two latch releasing lever means operable independently of each other, with one of the latch releasing levers being operable for effecting release of the latching lever to permit a chain link to be removed from the opposed socket means when the cargo tie-down device is not under tension and with the second latch releasing lever being operable for effecting the release of the chain when the device is operating under tension. A single spring means is operatively associated with the latching lever and the latch releasing levers for biasing the latching lever to a latched position and for biasing the latch releasing levers to inoperable positions. The quick release cargo tie-down device includes a selectively adjustable collar means having an internally threaded opening operable for receiving externally threaded means of a hook member, with the selectively adjustable collar means operable for effecting displacement of the hook member relative to the chain retaining block members, whereby the effective tension applied to a cargo tie-down chain can be adjusted.



3,718,947

TIE DOWN ROPE

Paul W. Huber, 5440 Woodcrest Drive, Salt Lake City, Utah 84117

Filed May 21, 1971, Ser. No. 145,709

Int. Cl. A44b *21/00*

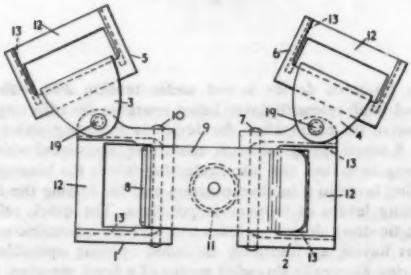
U.S. Cl. 24—73 HH **11 Claims**

A tie down device which includes an elongated braided rope having a first connecting end and an opposite end passed through spaced strands of said rope forming a sleeve therein proximate a mid-portion of said rope thereby forming a loop on one side of said sleeve, and release means secured to the mid-portion of said rope proximate

the one side of the sleeve for removing locking pressure applied to the rope by the sleeve when the rope is under

tension in a tie down mode and thereby allow the rope to slide back through the sleeve.

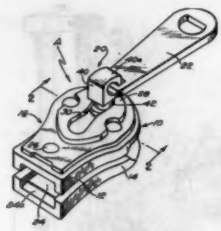
3,718,948
SAFETY HARNESSES
Clement Rahmin Dartois, 10 Herbert Crescent (Off Hans Crescent), London SW. 1, England
Filed June 9, 1969, Ser. No. 831,311
Claims priority, application Great Britain, June 12, 1968, 27,889/68
Int. Cl. A44b *11/25, 17/00*
U.S. Cl. 24—75 **6 Claims**



A half buckle for a safety belt having a frame with an abutment at one side, a member slidable in the frame and having a slot generally parallel to the abutment. A belt is looped around the portion of the slidable member on the other side of the slot from the abutment and, when tension is applied to the belt, is trapped against the abutment.

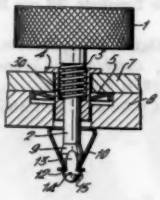
3,718,949
SLIDER CONSTRUCTION FOR SEPARABLE FASTENERS
Gerald F. Harlam, and Marian A. Okolowicz, both of Providence, R.I., assignors to Pilling Chain Co. Inc., West Barrington, R.I.
Filed April 13, 1971, Ser. No. 133,512
Int. Cl. A44b *19/26*
U.S. Cl. 24—205.15 R **5 Claims**

A slide fastener including a cast slider body to which is attached a cast plate member, the plate member having a generally longitudinally extending slot formed therein for slidably receiving a rotatable swivel pin to which a tab device is attached, the plate member and slot formed therein being so fashioned that upon manipulation of the tab device and swivel pin, the latter is guided along a precisely defined path, such that there results greater ease of travel of the slider body



around corners and the like, thereby effectively improving upon the reliability of the fastener assembly.

3,718,950
FASTENING DEVICE FOR DETACHABLY SECURING TWO MEMBERS TOGETHER
John Bertil Engstrom, Helsingor, Denmark, assignor to T. Praestmark, Copenhagen, Denmark
Filed Jan. 12, 1972, Ser. No. 217,145
Claims priority, application Denmark, Jan. 27, 1971, 341/71
Int. Cl. A44b *17/00*
U.S. Cl. 24—217 **9 Claims**

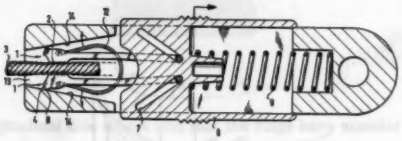


A fastening device for detachably securing together a member, such as a plate member, having a stud rotatably and axially movably mounted therein, and another member which may also be a plate member, and which is provided with one or more detent members adapted to cooperate with one end of the stud. At the other end the stud may for example be provided with a head, which may be similar to a screw head, and a spring member is biasing the stud axially in relation to the plate member in which it is mounted and tends to move the head of the stud away from the associated plate member. The end of the stud adapted to cooperate with the detent members is provided with axially spaced shoulders preferably forming parts of notches into which the said detent members may snap so as to lock the stud, when the stud is moved axially against the force exerted by the spring member. The said shoulders are shaped in such a manner that the stud may be locked merely by depressing the head thereof despite of its angular position, and released by rotating the stud in any direction.

3,718,951
ROPE CLAMP
Max Pasbrig, Casa Luce-Via all'Eco, Orselina, Switzerland
Filed Jan. 15, 1971, Ser. No. 106,664
Claims priority, application Germany, Jan. 19, 1970, P 20 02 184.5
Int. Cl. F16g *11/04*
U.S. Cl. 24—126 **7 Claims**

The specification describes a rope clamp with at least one clamping body, which can be moved between wedge-shaped

guiding faces. A rear part of the clamping body remote from the rope is constructed as a pivoting edge or is rounded and on actuation of the clamp the clamping body slides into its clamping position with the rear part on an associated guiding face comes into engagement with the rope. Following this the clamping body swings about the pivoting edge as a pivot axis until the whole clamping face lies against the rope.



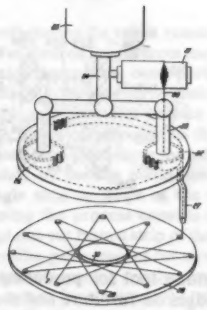
The clamping face is so arranged that in the clamping position the front edge of the clamping face lies behind, in terms of the pulling direction, a line drawn perpendicular to the direction of pulling through the axis of rotation or at the most lies on this axis. Furthermore for actuating the clamp to release it the clamping body is first swung about its axis of rotation formed by its pivot edge before it begins its sliding movement on the guiding face.

3,718,952

EPICYCLIC WEAVING OF FIBER DISCS

Jack Palfreyman, Tansley, Nr. Matlock, Derbyshire; Henry Edward Middleton, Derby, and Alan Anthony Baker, Mickleover, Derby, all of England, assignors to Secretary of State for Defence, London, England

Division of Ser. No. 735,411, June 7, 1968, Pat. No. 3,632,460.
This application March 13, 1970, Ser. No. 24,404
Int. Cl. D06c *3/08*
U.S. Cl. 28—15 **5 Claims**



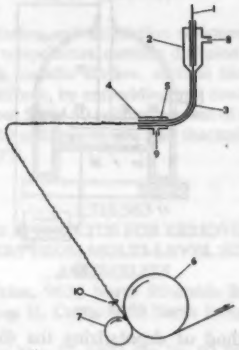
An apparatus for winding one or more fibers under tension onto a former is used for making a turbine or compressor rotor for a gas turbine engine. The apparatus includes an epicyclic system having an annulus wheel means and at least one planet wheel means which can be rolled about a circumference of the annulus wheel means to define an epicycloid path of travel. A guide means is operatively associated with one of the planet wheel means for guiding one or more fibers from a source of supply onto a former, and the guide means is arranged so that its end nearer the former follows a substantially epicycloid motion as dictated by the rolling of the planet wheel means about the circumference of the annulus wheel means.

3,718,953

HEAT TREATMENT OF YARNS

Robert Reid Coats, John Michael Greenway, and William Glen, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Filed July 13, 1970, Ser. No. 54,236
Claims priority, application Great Britain, July 28, 1969, 37,790/69; Jan. 8, 1970, 1,006/70
Int. Cl. D02g *1/00*
U.S. Cl. 28—72.1 **11 Claims**



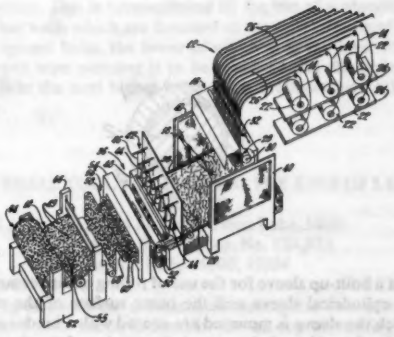
Process and apparatus for heat treating yarns wherein a yarn entrained in a gaseous stream is brought into contact with a surrounding annular stream of heated gas and thereafter the yarn tension is allowed to fall.

3,718,954

METHOD FOR PRODUCING A NONWOVEN REINFORCEMENT STRUCTURE

Thomas E. Philipps, Granville, Ohio, assignor to Owen-Corning Fiberglas, Toledo, Ohio

Division of Ser. No. 823,459, May 9, 1969, Pat. No. 3,614,936.
This application Dec. 24, 1970, Ser. No. 101,217
Int. Cl. B32b *7/08*
U.S. Cl. 28—77 **5 Claims**



A nonwoven structure and method of making it where the structure includes short lengths of linear material such as glass strand united by nonadhesive means into a coherent body.

3,718,955

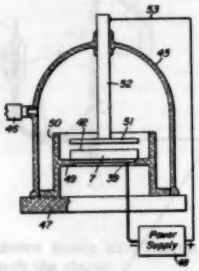
METHOD OF MANUFACTURING SEMICONDUCTOR CAMERA TUBE TARGETS

Rowland W. Redington and Pieter J. van Heerden, Schenectady, N.Y., assignors to General Electric Company

Filed Sept. 19, 1960, Ser. No. 56,799

Int. Cl. H01j 9/20

U.S. Cl. 29—25.11 11 Claims



1. The method of depolarizing the surface of semiconductor photoconductive camera tube target having a front side for viewing a scene so that current may be conducted by an electron beam scanning the back side of said target and through said target without being impeded by a dipole surface layer on the target, comprising the steps of adding a material operative when added to the semiconductor to impart p-type conductivity characteristics thereto, and bombarding the side of the target which is to be scanned by the electron beam with a stream of noble gas ions in order to increase acceptor levels in the semiconductor surface and render the surface comparably p-type with the interior of the semiconductor.

3,718,956

BUILT-UP SLEEVE ROLL FOR ROLLING AND METHOD OF MAKING THE SAME

Yasuhiro Sekimoto, and Itsuo Korenaga, both of Kitakyushu, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Oct. 7, 1971, Ser. No. 187,278

Int. Cl. B21b 31/03

U.S. Cl. 29—132 4 Claims

In a built-up sleeve for the use of rolling the inner surface of the cylindrical sleeve and the outer surface of the shaft on which the sleeve is mounted are coated with a binder containing hard tough and sharp angled particles of the diameter in average of not less than 0.05 mm (350 mesh in granularity). After being coated with the binder, the cylindrical sleeve and the shaft are fitted together by shrinkage fit or expansion fit. The bending of the shaft and slippage of the sleeve are well prevented by the construction as above.

3,718,957

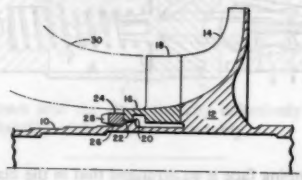
METHOD OF SECURING A THREADED ELEMENT IN A HIGH CENTRIFUGAL FORCE FIELD

Wayne C. Shank, Williamsport, Pa., assignor to Avco Corporation, Williamsport, Pa.

Filed Sept. 3, 1970, Ser. No. 69,408

Int. Cl. B21k 3/04; B23p 15/02, 15/04

U.S. Cl. 29—156.8 CF 1 Claim



A method for securing a threaded element on a shaft comprising the steps of machining the threads on the element to a predetermined interference fit with the shaft on which it will be secured. The nut is heated to enable threading onto the shaft. The predetermined interference fit is selected so that when the element is cooled an internal hoop stress is generated that is sufficiently large to prevent loosening by circumferential enlargement of the element in a high centrifugal force field.

3,718,958

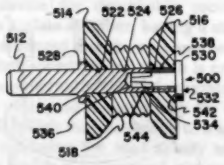
ROTARY CUTTING TOOL

William S. Brucker, 1500 Providence Road, Towson, Md. 21204

Filed May 7, 1971, Ser. No. 141,236

Int. Cl. B23d 71/00; B26d 1/12

U.S. Cl. 29—103 R 6 Claims



A rotary cutting tool for producing bevelled or otherwise molded edges on furniture and the like, comprising a unitary shank-mounted peripheral-cutter having fixed conical guides at each end sloped to form between them an included angle of 90°; both assembled and one-piece embodiments are disclosed.

3,718,959

ROLL FOR DEWATERING PRESSES OF PAPER MAKING MACHINES

Vaino Sallas, Kansakoulu, Vaajakoski, Finland

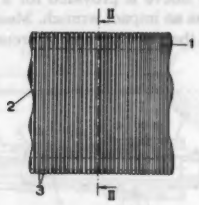
Filed Feb. 11, 1971, Ser. No. 114,640

Int. Cl. B21b 27/02

U.S. Cl. 29—121 H 2 Claims

A roll for dewatering presses of paper making machines consists of a roll body having a coating consisting of a strip or

of rings The outer surface of the roll is provided with grooves. The invention is particularly characterized in that the strip has



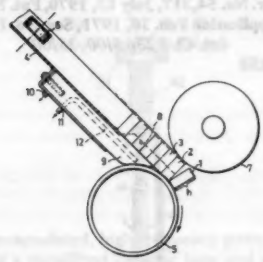
a longitudinal side elbow and that the rings have annular side ribs.

3,718,960

MACHINE FOR MANUFACTURING HELICAL FIN TUBES

Sten Hilding Soderstrom, Ulvsatersvagen 9, and Olof Cardell, Strandvagen 1, both of Sollentuna, Sweden

Filed Dec. 11, 1970, Ser. No. 97,245
Int. Cl. B23p *15/26, 15/16*
U.S. Cl. 29—157.3 AH 10 Claims



A process of manufacturing fin tubes consisting in cutting series of metal plates of desired length from metal strips, feeding said plates in a guide towards the outer periphery of a tube and fastening the plates e.g. by welding by their end edges in a circular or helical row onto the outer surface of the tube, so that the length of the plates corresponds to the height of the fin formed of the plates, thus permitting the adjustment of the height of the fin solely by cutting metal plates of different length from one single strip or strips of the same width. A machine for performing the process consists of a device for feeding loose metal plates cut from a strip of determined width in a row into a gutter-like guide, means for moving said plates along said guide in desired spacing relation towards the outer periphery of a tube, means for rotating said tube and possibly also for longitudinal displacement thereof relative to said gutter-like and means for welding said metal plates with their end edges onto the tube in a row to form a fin thereon.

3,718,961

ELECTRICAL CONNECTION BETWEEN DISSIMILAR METALS

John L. Harper, deceased, late of Sharon, Pa. (by Ann K. Harper, executrix)

Division of Ser. No. 742,268, July 3, 1968, abandoned. This application Nov. 12, 1970, Ser. No. 89,095
Int. Cl. B32b *15/20*
U.S. Cl. 29—191 2 Claims

A method and material for providing a good electrical and mechanical joint between aluminum and copper is described. Data is included to demonstrate the mechanical and electrical characteristics of joints made between aluminum and copper employing a novel cadmium zinc bonding composition.

3,718,962

HIGH TEMPERATURE METALLIC DIFFUSION COATING

David J. Levine, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 780,177, Nov. 29, 1968, Pat. No. 3,617,360. This application Sept. 28, 1970, Ser. No. 76,278
Int. Cl. B32b *15/00*
U.S. Cl. 29—195 3 Claims

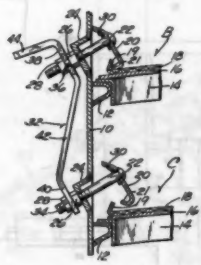
Improved oxidation and sulfidation resistance can be imparted to a high temperature metallic diffusion coating diffusion bonded with metallic surface, such as nickel, cobalt or iron base alloy surface, by embedding in a coating outer portion between about 5 and 50 volume percent of oxide particles of up to about 20 microns in size and thermally stable to at least about 2,000°F.

3,718,963

METHOD AND APPARATUS FOR REMOVING SCREEN WIRE MEMBERS FROM MULTI-LEVEL SCREEN DECK ASSEMBLIES

George C. Hawkins, 9636 North Riverside Drive, Mequon, Wis., and James H. Cutts, 5450 North Long Island Drive, Milwaukee, Wis.

Filed Nov. 25, 1970, Ser. No. 92,763
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 D 4 Claims



The screen wire members are removed by first loosening the nuts on the clamp bar holding bolts and then moving the bolts axially inwardly to thereby move the clamp bars to a non-holding position. This is accomplished by the use of a plurality of clamp bar tools which are fastened to the ends of pairs of vertically spaced bolts, the lower of which is at the level where the screen wire member is to be removed and the upper of which is at the next higher level of the multi-screen deck assembly.

3,718,964

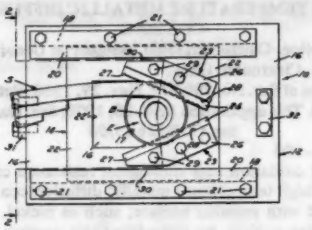
UNIVERSAL TOOL FOR HOLDING THE EYES OF LEAF SPRINGS

Ronald J. Warezak, 304 Annison, Union Lake, Mich.

Filed March 8, 1971, Ser. No. 121,811
Int. Cl. B23p *19/00, 19/04*
U.S. Cl. 29—200 P 10 Claims

The jig-like tool has a horizontal rectangular base plate of substantial area which is fixed in use on top of which plate parallel, laterally spaced side guide way and top restraining elements are fixedly mounted. A rectangular slide plate rests atop the base plate, being laterally and vertically restrained by said way and guide elements, and thus confined with reasonable side and top space clearance for longitudinal sliding movement on the base plate. Elongated and laterally spaced, block-

like wear and guide plate units are fixedly mounted on the slide plate, with inner surfaces of their respective wear and guide parts converging angularly for a wedging engagement of a leaf spring eye between upright guide surfaces of the units,



the eye being supported on their horizontal wear surfaces. The wear and guide blocks are fixedly mounted to the top of the slide plate by a series of upright studs; and end stops on the fixed base plate and guide-way sub-assembly prevent separation therefrom of the slide,wear and guide plate sub-assembly.

3,718,965

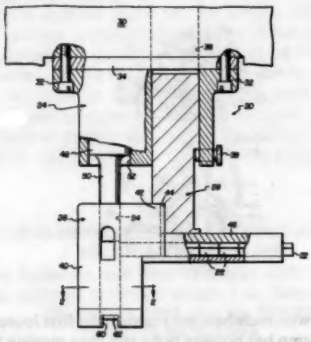
PIERCE NUT INSTALLATION HEAD

Jerry H. Steward, Bloomfield Hills, Mich., assignor to Multifastener Corporation, Detroit, Mich.

Filed June 3, 1971, Ser. No. 149,516

Int. Cl. B23q 7/10; B23p 19/00

U.S. Cl. 29—211 D **9 Claims**



The disclosure relates to an installation head apparatus, particularly suitable for securing a piercing fastener in a panel. The disclosed installation head includes a reciprocating plunger and a guide housing having a passage which receives the plunger and a plurality of pierce nuts in vertically stacked relation. The preferred embodiment of the guide housing provides an interference fit at the pierce nut corners to retain the nuts in the guide passage and explosion channels at the open end of the pierce nut passage which, in the event a pierce nut is fractured during the installation, receives the pierce nut fragments, guides the fragments away from the passage and prevents damage to the pierce nuts remaining in the passage.

3,718,966

TUBE EXTRACTING MECHANISM

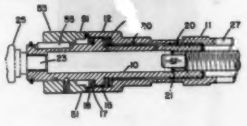
Charlie D. Miller, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed July 16, 1971, Ser. No. 163,219

Int. Cl. B23p 19/04

U.S. Cl. 29—234 **7 Claims**

The invention has to do with a mechanism for extracting heat exchanger tubes from heat exchangers. A drawbar has threaded engagement with a sleeve journaled in a housing. A tube pulling tap is connected to the drawbar and initially extends outwardly from the housing for threaded engagement with the tube. The sleeve is provided for a connection to a power driver such as an impact wrench. Means is provided to restrain rotation of the drawbar and tap relative to the hous-



ing. A clutch serves to initially connect the sleeve to the housing so they rotate in unison to thread the tap into the tube to be extracted. Thereafter the clutch is disengaged and the sleeve is rotated separately to draw the tap and tube into the housing while the end of the housing is positioned against the tube sheet.

3,718,967

METHOD OF CONSTRUCTING A FERRULE UNIT FOR FISHING RODS

Milton J. Stevens, 1812 Crestmont Court, Glendale, Calif.

Division of Ser. No. 54,217, July 13, 1970, Pat. No. 3,614,143.

This application Feb. 16, 1971, Ser. No. 115,763

Int. Cl. B23p 3/00, 25/00

U.S. Cl. 29—458 **2 Claims**

A ferrule unit for connecting sections of a fishing rod formed of male and female ferrules that have a telescopic interfit which is on an extremely small taper and is cushioned by an O-ring provided on the end of the male ferrule and engaged with the tapered surface of the female ferrule, and a method for producing such a ferrule unit.

3,718,968

METHOD FOR CONNECTING A WIRE TO A COMPONENT

S. Donald Sims, Huntington, and Raymond W. Forestieri, Greenlawn, both of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 14, 1969, Ser. No. 799,469

Int. Cl. B23k 1/20, 31/02

U.S. Cl. 29—482 **7 Claims**

The method comprises deforming the end of the wire as by heating it above the melting point with a laser beam and per-

mitting it to solidify into a sphere to raise the vaporization point of the end. The wire is placed into contact with the component and the wire and the component are heated by a laser beam to provide a fusion weld.

3,718,969

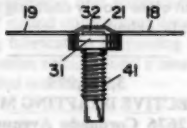
PLASTIC ENCAPSULATED SEMICONDUCTOR ASSEMBLIES

Eugene E. Segerson, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 722,471, April 18, 1968, Pat. No. 3,560,808. This application Sept. 21, 1970, Ser. No. 74,104

Int. Cl. B01j *17/00*

U.S. Cl. 29—588 **3 Claims**



A plastic encapsulated, high-frequency power transistor assembly having a metallized ceramic base and a metallic heat sink is fabricated by a method which includes the use of a thin, substantially flat lead frame member having at least four inwardly projecting, substantially coplanar electroconductive leads and a bridging portion integral therewith connecting the ends of two of said leads. The lead ends are bonded to corresponding metallized areas of the ceramic base, one of said metallized areas having a centrally extended configuration adapted for die bonding of the semiconductor unit. The assembly is then completed by the attachment of a metallic stud to the opposite side of the ceramic base, wire bonding of the emitter region to the bridging portion of the lead frame, wire bonding of the base region to the remaining lead, and a final step of plastic encapsulation.

3,718,970

ELECTROMECHANICAL TRANSDUCER PROCESS

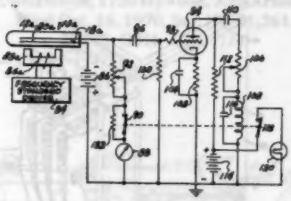
Robert B. Stanish, Chicago, Ill., assignor to Vibrionics Research Co., Lombard, Ill.

Division of Ser. No. 417,108, Dec. 9, 1964, which is a continuation-in-part of Ser. No. 193,520, May 9, 1962, Pat. No. 3,246,259. This application Nov. 13, 1968, Ser. No. 842,033

Int. Cl. G01r *4/00*; G05f *4/00*

U.S. Cl. 29—593 **8 Claims**

A method of manufacturing a device such as a resonant reed device having an enclosed mechanically displaceable conductive member with a controlled atmosphere within the enclosure, the method including steps of passing a substantial electric current through the member, the current being sufficient in magnitude to alter the mass of the member by the removal or addition of conductive material thereto or therefrom and measuring the displacement of a free portion of the conductive member while it is in motion in response to a predetermined force and thereby determining the mass distribution and inertial characteristics of the member while those characteristics are being altered within a sealed envelope containing a controlled atmosphere.



3,718,971

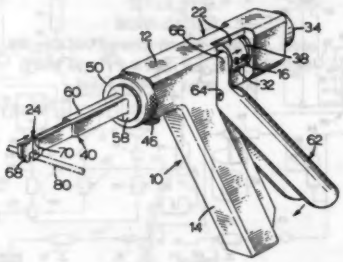
WIRE CUTTER

John McLean, Carleton Place, Ontario, and Louis Donald Charron, Greely, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Feb. 1, 1971, Ser. No. 111,430

Int. Cl. B26b *13/04*

U.S. Cl. 30—241 **2 Claims**



A wire cutter in which a pair of laterally abutting blade members with offset cutting jaws are slidable one along the other and also rotatable as a unit about their common axis to alter the shearing plane of the jaws with respect to the main body of the tool.

3,718,972

DENTAL CONSOLE

Shirl S. Fox, Menlo Park, and David M. Hershkowitz, Palo Alto, Calif.; said Fox assignor to Dental Designs, Palo Alto, Calif.

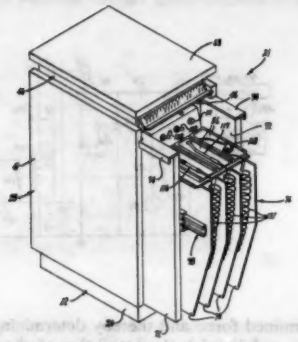
Filed Apr. 12, 1971, Ser. No. 132,979

Int. Cl. A61c *19/02*

U.S. Cl. 32—22 **14 Claims**

Dental console having a cabinet with a plurality of dental instruments mounted in the cabinet and with the cabinet being adapted to be connected to a source of at least first and second fluids. A plurality of separate

trays are mounted in the cabinet with one of the dental instruments being mounted in each tray. Switch means is



associated with each tray for controlling the supply of fluid to the dental instrument carried by the tray.

3,718,973

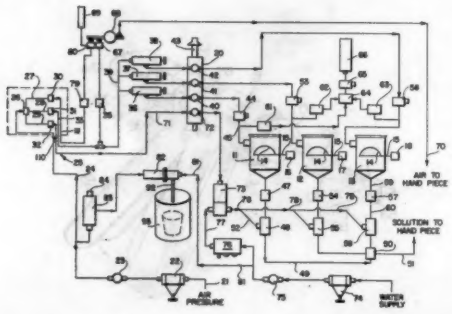
DENTAL SYSTEM

Robert W. Slater, 50 Longstaff St., and Joseph B. Barker, 2 Newell St., both of, Jacksonville, N.C.

Filed May 1, 1970, Ser. No. 33,643

Int. Cl. A61c *19/02*

U.S. Cl. 32—22 **29 Claims**



The specification discloses a system for use in dental prophylaxis. Containers of pumice, fluoride, and a polishing agent are provided with a discharge means to force these dental solutions from their respective containers and through a flexible conduit to a dental hand piece. The hand piece is equipped with a rotating applicator for applying the dental solution to a dental patient. A selector control valve means is provided to select the appropriate container and the solution therein.

3,718,974

DENTAL HANDPIECE DRIP CONTROL SYSTEM

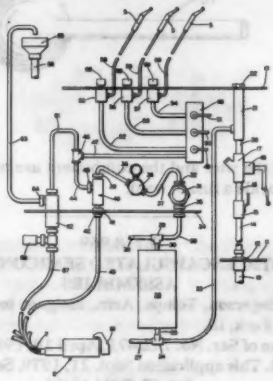
Dean H. Buchtel; Kenneth R. Lappin, and John A. Maurer, all of Canton, Ohio, assignors to The Weber Dental Manufacturing Company, Canton, Ohio

Filed Sept. 20, 1971, Ser. No. 181,671

Int. Cl. A61c *19/02*

U.S. Cl. 32—22 **8 Claims**

A control system for exhausting coolant water which is trapped within a dental handpiece coolant water supply line upon deactuation of the handpiece to eliminate drip at the handpiece. Compressed air which actuates a coolant water supply valve is exhausted into a branch line upon closing of the supply valve. The exhaust air opens a valve positioned between the water coolant line and drain facilities. The trapped coolant water flows into the drain through the open



exhaust valve reducing the trapped water and pressure in the coolant water supply line. The exhaust air is relieved slowly through a choke after opening the exhaust valve, permitting the exhaust valve to close slowly enabling a sufficient quantity of trapped water to be exhausted.

3,718,975

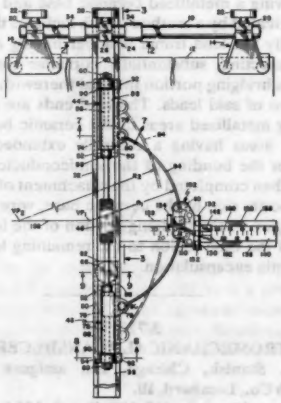
PERSPECTIVE DRAFTING MACHINE

Charles S. Ross, 2626 Coronado Avenue, No. 74, Imperial Beach, Calif.

Filed July 2, 1971, Ser. No. 159,191

Int. Cl. B43l *13/14*

U.S. Cl. 33—77 **9 Claims**



A perspective drafting machine which can be set at any position on a drawing board and adjusted to any selected horizon line. The straight edge or scale is carried on a travelling head which moves along an arcuate guide beam, the radius of the arc being easily adjustable to provide the required vanishing point in the perspective. Means is provided on the scale for setting the radius quickly and accurately. The arcuate guide beam is mounted on a carriage which moves along a track, and the entire beam, head and scale assembly can be swung to either side of the track to provide vanishing

points toward opposite sides of the board, without losing any settings.

3,718,976

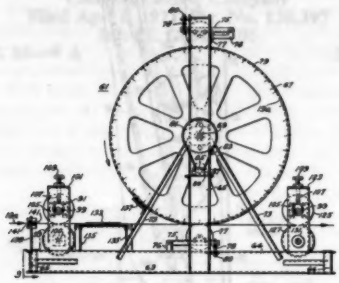
APPARATUS FOR MEASURING STRAND

Charles R. Nippert, Sr., Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 668,782, Sept. 19, 1967, Pat. No. 3,556,167. This application Aug. 13, 1970, Ser. No. 63,533

Int. Cl. G01b *3/12, 5/04*

U.S. Cl. 33—129 **2 Claims**



Wire strand is fabricated and subsequently severed into measured lengths of strand at locations determined on a wire of the strand during fabrication by passing the wire between rearwardly urged tension rolls, around a measuring wheel, and between unidirectional tension rolls.

3,718,977

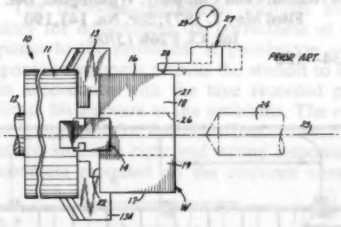
SURFACE INDICATOR

David M. Kraklau, St. Joseph, and John H. Taylor, Sodus, both of Mich., assignors to Advance Products Corporation, Harbor, Mich.

Filed May 24, 1971, Ser. No. 146,052

Int. Cl. G01b *5/14*

U.S. Cl. 33—172 D **5 Claims**



A method and apparatus for locating the center of a noncircular, such as a rectangular, face of a workpiece to permit the boring or drilling of an opening in the workpiece at the center of said face. The workpiece is adapted to be mounted in a rotatable chuck and locating blocks are firmly held, as by permanent magnets, against diametrically opposite surfaces of the workpiece adjacent said face. The locating blocks have planar reference surfaces which project beyond the said face of the workpiece. An indicating device is mounted near the said face of the workpiece and has a radially outwardly extending contact point disposed to engage the reference surfaces. The workpiece is rotated by the chuck to enable the contact point to engage the reference surfaces, and the workpiece is radially adjusted by the chuck until the reference surfaces are equidistant from the rotational axis.

3,718,978

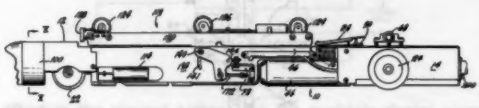
PIPELINE SURVEY VEHICLE

Barry D. Van Koevering, 211 Russell Street; William M. Blough, Jr., 313 W. Bennett Street, both of Saline, Mich.; Fred H. Bunnell, 719 Woodfield Dr., Jackson, Mich.; William B. McDowell, 7416 Ledgewood Dr., Fenton, Mich., and George E. McDowell, 1730 Ivywood, Ann Arbor, Mich.

Filed Oct. 16, 1970, Ser. No. 81,261

Int. Cl. G01b *7/28, 7/34*

U.S. Cl. 33—174 L **17 Claims**



The invention is directed to a vehicle adapted to be inserted within a pipeline or conduit, such as a buried gas main, having pipeline characteristic sensing means mounted upon the vehicle for sensing the pipe deflection in a vertical plane, leaks, cracks, corrosion or other pipeline characteristics. The vehicle is self-propelled and is self-steering. Self-steering is accomplished by means of a gravity operated sensing device which will maintain the vehicle in a predetermined vertical orientation at all times. Traction of the vehicle drive wheels is augmented by friction producing means engaging the upper region of the pipe and biasing the drive wheels into firm engagement with the pipe lower region inner surface. Control of the vehicle and recording of the pipeline characteristics is achieved remotely through electric conductors affixed to the vehicle.

3,718,979

BOW-SIGHT

Harry W. Allen, 6220 Apache Street, Dayton, Ohio

Filed Dec. 19, 1968, Ser. No. 785,253

Int. Cl. F41g *1/00, 5/00*

U.S. Cl. 33—265 **3 Claims**

A simple but effective bow-sight featuring a broad bow hugging base, a pivoted arm, and a sighting screw arranged transverse to said arm. The arm and said base having a functional calibrated relation enabling highly accurate sighting and substantially instantaneous correction of range, as needs require.

3,718,980

MEASURING CONSTRUCTION

George Poulos, 3020 Pearl St., Franklin Park, Ill.

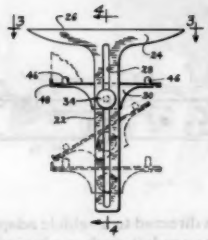
Filed May 20, 1970, Ser. No. 39,105

Int. Cl. B43l *7/06, 13/00*

U.S. Cl. 33—174 G **4 Claims**

A measuring device for use in determining the span between two objects and for use in marking a piece of material whereby

the material can be cut to a desired size for filling the span. Said device comprising a longitudinally extending main body portion having a transversely extending edge member located at one end of the body portion. A slot extends longitudinally of the body portion, and a guide member is attached to the body portion and is movable along said slot. The guide member defines a first surface for engaging the edge of an object, and



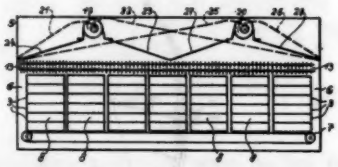
the body portion can then be moved relative to the guide member for engagement of its transverse edge with the object on the opposite side of the span. Subsequent to this, the guide member can be placed in engagement with a piece of material which is to be employed for filling the span. The transverse edge then serves as a means for locating a mark or scoreline to achieve accurate severing of the piece of material.

3,718,981

METHOD AND APPARATUS FOR COOLING FOODS CONTAINED IN PORTION CONTAINERS

Ernst Breuning, Fruhlingsweg 6, 7016 Gerlingen-2, Germany

Filed Oct. 13, 1970, Ser. No. 80,403
Int. Cl. F26b *3/00*
U.S. Cl. 34—33 **4 Claims**



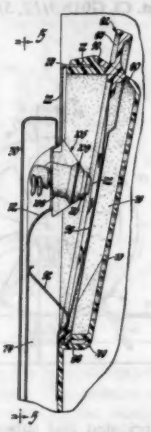
In the cooling of foods, particularly yogurt, stored in portion containers, the containers are arranged in groups in air permeable receptacles and the receptacles are stacked before being introduced into a tunnel whose interior is cooled to change the temperature of the food. The stacks introduced into the tunnel have cross sectional areas approximating the tunnel cross sectional area, and the receptacles have air flow openings in either their side walls or their bases. The stacks in the tunnel are uniformly traversed by a cooling air flow provided by a radial blower, and the air current flowing to the interior of the stacks flows through air flow passages formed at least by the exterior surfaces of the stacks and the interior surfaces of the tunnel. The air current is directed through one or more heat exchangers before it traverses the stacks. The tunnel may be divided into twin tunnels and, when several radial blowers are used, the various air currents may be mixed for uniformity of temperature.

3,718,982

EXCESS LINT INDICATOR FOR A CLOTHES DRYER

Homer W. Deaton, Centerville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1971, Ser. No. 193,039
Int. Cl. F26b *21/06*
U.S. Cl. 34—82 **4 Claims**



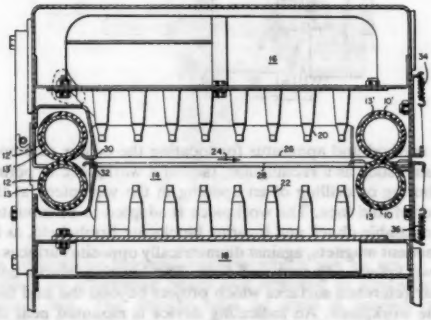
A domestic clothes dryer has a circulating airflow duct system including a tumbling drum and a lint filter for filtering lint from air leaving the tumbling drum. An excess lint indicating system includes a visible signal light on the dryer and an operating switch therefor. The switch is operated by a pressure actuated surface which reposes against the cloth-like screen of the filter whereby the screen forces the switch as lint accumulates to energize the signal light.

3,718,983

SHEET DRYING APPARATUS

John Arnold Crowell, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 7, 1971, Ser. No. 141,190
Int. Cl. F26b *13/00*
U.S. Cl. 34—156 **14 Claims**



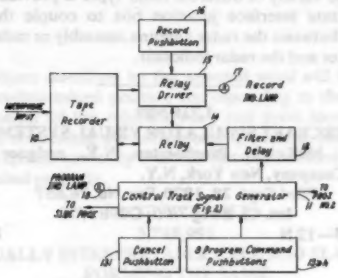
Sheet material, such as photographic film, may be dried efficiently in an apparatus comprising

a drying chamber, having first and second plenums, each of said plenums having an array of nozzles for directing high velocity air at the respectively opposite sheet surfaces,

first and second sets of conveying rolls arranged so as to provide a path for sheet material between the respective arrays of nozzles of said plenums and spaced so as to contact sheet material moving through said path, and

a plurality of filamentary guides on at least one side of said path.

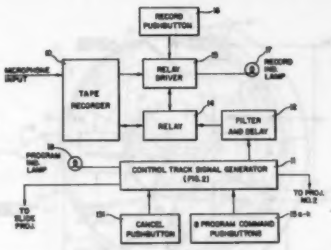
3,718,984
FREE-STANDING AUDIO-VISUAL-RESPONSE TEACHING SYSTEM
Terry L. Hewitt, Schenectady, N.Y., assignor to General Electric Company
Filed Apr. 1, 1971, Ser. No. 130,397
Int. Cl. G09b 7/06
U.S. Cl. 35—9 A **21 Claims**



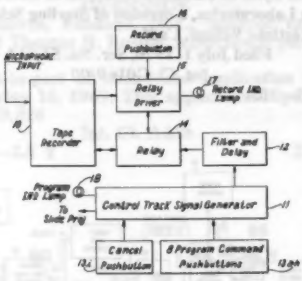
A programming component generates self-clocking digital control signals and records them on one track of a magnetic tape and records analog signals on another track for providing audio information to the student. The tape is then utilized in a response component which responds to the digital control signals to provide automatic operations such as remotely operating one or two visual display devices (i.e., a slide projector), for presenting to the student material in lecture form and, or, multiple-choice problems. The response component includes electronic logic circuitry for determining the correctness of the student's response to the problems. A pushbutton assembly on the response component permits the student to advance the tape in accordance with the tape recorded program and to indicate his answers to the problems. The response component is intended for individualized instruction with totalling of the student's right and wrong responses being done on counters mounted on the response component.

3,718,985
GROUP INSTRUCTION AUDIO-VISUAL TEACHING SYSTEM
Terry L. Hewitt, Schenectady, N.Y., assignor to General Electric Company
Filed Apr. 1, 1971, Ser. No. 130,391
Int. Cl. G09b 7/06
U.S. Cl. 35—9 A **18 Claims**

A programming component generates self-clocking digital control signals and records them on one track of a magnetic tape and records analog signals on another track for providing audio information to a group of students. The tape is then utilized in a response component which responds to the digital control signals to provide automatic operations such as remotely operating one or two visual display devices (i.e., a slide projector), and for presenting to the students over a loudspeaker, material in lecture form and, or, multiple-choice questions. The response component is operated by the instructor and includes multiple lamps which display to the instructor the correct answers to the multiple-choice questions.



3,718,986
SCANNED AUDIO-VISUAL-RESPONSE TEACHING SYSTEM
Terry L. Hewitt, Schenectady, N.Y., assignor to General Electric Company
Filed Apr. 1, 1971, Ser. No. 130,386
Int. Cl. G09b 7/06
U.S. Cl. 35—9 A **19 Claims**

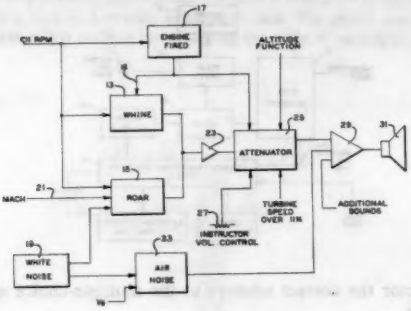


A programming component generates self-clocking digital control signals and records them on one track of a magnetic tape and records analog signals on another track for providing audio information to the student. The tape is then utilized in a response component which responds to the digital control signals to provide automatic operations such as remotely operating a visual display device (i.e. a slide projector), for presenting to the student material in lecture form and/or multiple-choice problems. The response component includes electronic logic circuitry for determining the correctness of the student's response to the problems. A pushbutton assembly on the response component permits the student to advance the tape in accordance with the tape recorded program and to indicate his answers to the problems. The response component is interconnected with a data collection and analysis component for recording the student's responses for subsequent computer processing.

3,718,987
AIRCRAFT SOUND SIMULATION SYSTEM
Fred F. Carver, Chenango Forks, N.Y., assignor to Singer-General Precision, Inc., Binghamton, N.Y.
Filed Sept. 10, 1970, Ser. No. 71,018
Int. Cl. B64g 7/00; G09b 9/08
U.S. Cl. 35—12 Q **7 Claims**

Sound generation apparatus to simulate the sounds made by a jet engine. By adding the outputs of two nominally identical

oscillators constructed using non-precision components which cause them to have slightly different output frequencies a sound closely simulating whine is obtained. Amplitude of



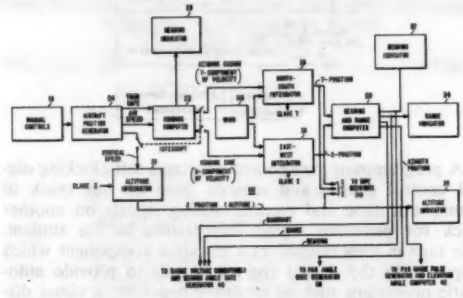
sound is controlled by the use of field effect transistor shunts which have applied to their gates signals representing the parameters which affect the level of sound heard by a listener.

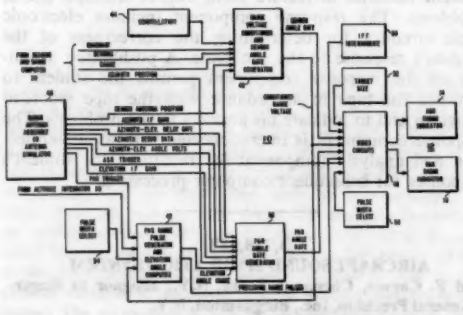
3,718,988

TARGET GENERATOR

Lloyd D. Ball, Santa Monica; Clifford K. Friend, Woodland Hills, and Lynn E. Schneider, Simi, all of Calif., assignors to Sterling Laboratories, a division of Sterling Scientific Industries, Westlake Village, Calif.

Filed July 1, 1970, Ser. No. 51,614
Int. Cl. G01s 9/00
U.S. Cl. 35—10.4 **46 Claims**





A target generator for simulation of images on a radar display is provided. The target generator which is of compact size and light weight employs heading and bearing and range computers utilizing step motors to drive potentiometers, resulting in drift-free operation and the ability to interrupt a training exercise for instructor critique. Computation of bearing and range is accomplished by initially determining from X and Y position signals the particular one of four different quadrants into which the bearing falls, and thereafter driving a step motor and associated potentiometers according to the quadrant determination. The precise range and bearing are determined by balancing the first set of X and Y position signals against a second set of generated X and Y position signals. The target generator provides for highly realistic target simulation by converting synchro data from a radar antenna assembly or radar antenna simulator into sine and cosine components to achieve angle gating and through use of wind simulation, target amplitude scintillation, IF gain controls and IFF interrogation. The target generator is further arranged so as to provide both long range or ASR and short range or PAR signals simultaneously and independently using PAR antenna servo controls. Flexibility in the use of the target generator with a wide variety of different radar types is provided by use of a separate interface junction box to couple the target generator between the radar antenna assembly or radar antenna simulator and the radar indicator.

3,718,989

AIRCRAFT SIMULATOR VISUAL SYSTEM

Robert A. McKnight, Binghamton, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Sept. 28, 1970, Ser. No. 76,657
Int. Cl. B64g 7/00; G09b 9/08
U.S. Cl. 35—12 N **8 Claims**

A visual simulation system for a flight trainer, or the like, comprising a spherical transparency for projection on a suitable viewing surface by a point light source located within the sphere. Three axes of rotational movement are provided for imparting visual attitude cues to the student, and special mechanism comprising a four-bar parallelogram linkage is provided for maintaining proper positional relationships during simulated motion in the roll axis.

3,718,990

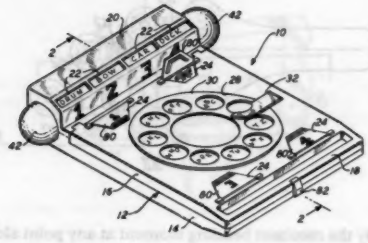
WORD AND CHARACTER RECOGNITION APPARATUS

Pat A. Mercorelli, 9 Duane Place, Bloomfield, N.J., and John N. Mercorelli, 1265 Van Houten Avenue, Clifton, N.J.

Filed Feb. 16, 1971, Ser. No. 115,510
Int. Cl. G09b 17/00
U.S. Cl. 35—35 D **16 Claims**

Educational and game apparatus, particularly useful for teaching spelling and word recognition and for providing entertainment, including a plurality of first indicia, e.g. words, and a plurality of second indicia, e.g. pictures corresponding to objects described by such words, if words and pictures are

utilized, the words are provided with designations, e.g. numbers, a word is selected and the word is spelled out letter by letter, e.g. by means of a rotatable dial, the pictures are concealed during the spelling out process and after the selected word has been spelled out properly the picture corresponding



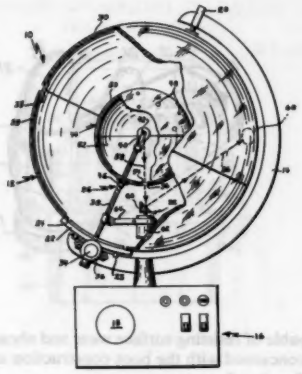
to the object described by the selected word will be moved into a predetermined position corresponding to the designation (number)of the selected word and upon movement of structure concealing the corresponding picture, such picture will be exposed to visibly indicate that the selected word has been spelled properly.

3,718,991
TACTUALLY INTERPRETABLE CELL AND SLATE FOR FORMING THE SAME
Haig Kafafian, 4201 Cathedral Ave. N.W., Washington, D.C.
Filed Feb. 22, 1971, Ser. No. 117,544
Int. Cl. G09b 21/02
U.S. Cl. 35—38 **6 Claims**

A tactually interpretable cell including a tactually perceptible reference configuration having one or more tactile positions arrayed in a preselected pattern in proximity to the said reference configuration, the reference configuration and tactually perceptible punctiforms or other forms placed in said tactile positions being easily readable tactually to convey information. A slate for use in forming the cell of the invention includes means to form the reference configuration, and stylus openings around said means.

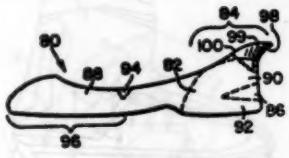
3,718,992
SELF-CONTAINED PLANETARIUM
Thomas F. McGraw, 808 Felbar Ave., Torrance, Calif. 90503
Filed May 11, 1971, Ser. No. 142,146
Int. Cl. G09b 27/06
U.S. Cl. 35—42.5 **6 Claims**

The self-contained planetarium provides a graphic, basic representation of the star canopy and moon's motion over the earth's surface. This planetarium has a rotating outer globe representing the earth and a stationary inner sphere. The sphere has perforations therein representing the relative position of the stars in the heaven as well as a perforation utilized in projecting the moon's image to the surface



of the globe. Thus, it is possible at a glance to view the star cover and the moon anywhere in the world.

3,718,993
OVERSHOE
John R. Schovee, Pittsford, N.Y., assignor to Paul J. Miller and Thomas R. Boston, a fractional part interest to each
Continuation-in-part of abandoned application Ser. No. 825,250, May 16, 1969. This application Sept. 2, 1970, Ser. No. 69,026
Int. Cl. A43b
U.S. Cl. 36—2.5 Y **20 Claims**

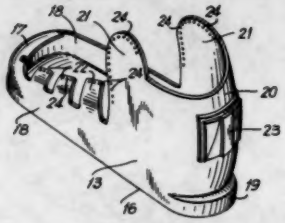


An overshoe or rubber having a construction such that it can be put on a shoe without having to use the hands or bend over. The rubber is constructed such that an enlarged shoe heel receiving opening is provided. In one construction of the rubber, the enlarged opening is formed, by merely stepping on the lower portion of the heel upper, with the toe of the other shoe. In another construction of the rubber, the enlarged opening is built directly into the empty shoe.

3,718,994
SKI BOOT CONSTRUCTION AND METHOD
I. Martin Spier, New York, N.Y., assignor to Calzaturificio Tecnica dei F LLI Zanatta S.N.C., Nervesa della Battaglia, Italy
Filed Jan. 22, 1971, Ser. No. 108,705
Claims priority, application Italy, Jan. 26, 1970, 8250270
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **8 Claims**

A boot especially suitable for the construction of ski boots in which an inner molded shell is formed of a stiff or rigid material for providing rigidity at selected locations and an outer shell is molded about the inner shell with the outer shell

comprised of a dissimiliar material having generally flexible and preferably abrasion resistance characteristics to provide flexibility at selected locations and also provide an exterior surface capable of resisting surface wear and abrasion. The invention is concerned with the boot construction as well as the method of forming the same.



3,718,995

HINGE BOOT

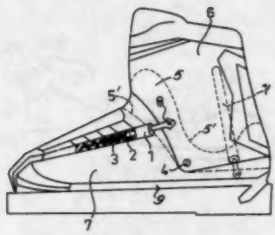
Josef Graup, Klingenweg Ch–8260, Stein am Rhine, Switzerland

Filed June 21, 1971, Ser. No. 154,845

Claims priority, application Austria, June 23, 1970, A 5,626/70

Int. Cl. A43b

U.S. Cl. 36—2.5 AL **8 Claims**



A ski boot, especially of synthetic material, having a first upper section comprising the tip portion of the boot and at least a part of the heel portion of the boot and also having a second upper section overlapping with said first upper section and being adapted to receive the ankle portion of a foot, said first and second upper sections being pivotally connected to each other with the pivot axis located near the sole while cushioning means are interposed between and connected to said first and second upper sections.

3,718,996

FLEXIBLE LINKAGES

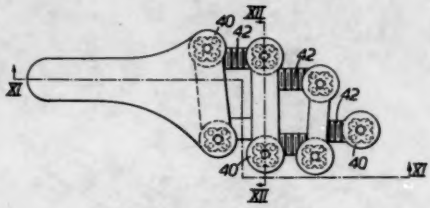
Marcus Luther Austin, 53 Park Avenue, Bedford, England

Filed Feb. 1, 1971, Ser. No. 111,533

Int. Cl. A43c *15/00*

U.S. Cl. 36—67 B **13 Claims**

A flexible linkage for supporting, reinforcing or similar purposes comprising a link structure which in section is of corrugated form and extends between and is connected with two or more members to be interconnected. The link structure distributes any bending stress applied to the structure over a greater length an thus over a greater area of material and consequently the resultant bending moment at any point along the length of the link is less than would be the case for a plain or non-corrugated link.



3,718,997

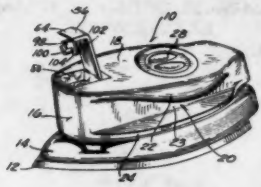
STEAM-DRY TRAVEL IRON

Willard G. Murphy, Macon, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Jan. 11, 1971, Ser. No. 105,579

Int. Cl. D06f *75/34*

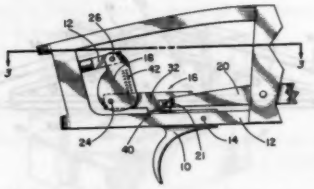
U.S. Cl. 38—90 **17 Claims**



An electric steam-dry travel iron having no separable components that must be assembled or removed between storage and operating conditions either dry or with steam, particularly a low silhouette handle solid in appearance having a wide convexly crowned top wall and contoured side walls including an intermediate finger receiving troughs between enlarged upper grip rims and enlarged lower lips that protectively overlie the metallic casing of the iron, the handle actually being hollow and defining a water reservoir with a fill opening releasably closed by a closure cap hinged to the handle and with a rotatable steam selector knob mounted in the closure cap, the handle heel and iron casing being generally coplanar to provide a support for the iron in its non-operating upright position, and a 110 or 220 voltage selection switch recessed in the handle heel.

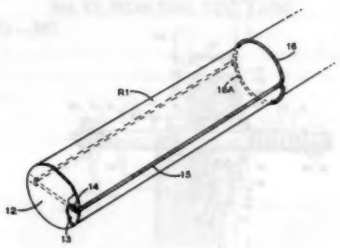
With increased use of permanent press garments, there is an increasing demand for an all-purpose steam and/or dry iron which might be small and lightweight enough to serve as a touch-up travel iron. Travel irons typically have required collapsible portions such as the handle, or detachable portions such as a water reservoir tank, and consequently either are not sufficiently durable for an all-purpose iron or are not convenient because of numerous accessory parts. Conventional steam irons generally are too large and heavy for effective use as a travel iron.

3,718,998
SEAR LEVER FOR ELIMINATING DOUBLING
Thomas J. Hartog, Ogden, Utah, assignor to Browning Industries, Inc., Morgan, Utah
Filed Nov. 4, 1971, Ser. No. 195,600
Int. Cl. F41c *11/10, 19/00*
U.S. Cl. 42—42 R 12 Claims



A sear lever for a double barrel firearm single trigger firing mechanism includes a control surface extending over the lifting surface of the sear lever which coacts with the firearm's first sear, the control surface being juxtaposed to the lifting surface at an acute angle such that the firearm's first sear moves against the control surface until the firearm's inertia block moves the sear lever away from the end of the first sear during counter recoil.

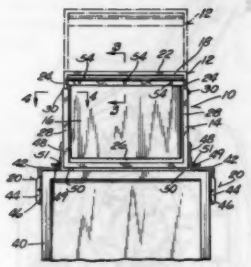
3,718,999
IDENTIFICATION DEVICES
Guy Voyce, 255 East 49th Street, New York, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,661
Int. Cl. G09f *3/14*
U.S. Cl. 40—309 1 Claim



Identifications which may be detachably mounted on various articles, more particularly articles of tubular form such as rolled drawings, wall paper, textiles and the like; in the form of tab means for carrying on the outer surface thereof various informative indicia, together with resilient means extending from the tab means for frictionally engaging inner or outer surface portions of the article; the tab means being located at one end of the article.

3,719,000
PLACARD HOLDING DISPLAY ASSEMBLY
Otto R. Finger, Mequon, Wis., assignor to Display Corporation International, Milwaukee, Wis.
Filed Dec. 18, 1970, Ser. No. 99,450
Int. Cl. G09f *7/22*
U.S. Cl. 40—125 H 7 Claims

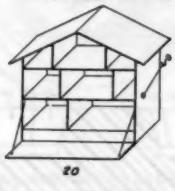
A display assembly which includes two frames, one telescoped inside the other. An upper frame holds a display placard and can be adjustably raised and lowered to accommodate display placards of various sizes. The display placard is held in a fixture rotatably mounted on the upper frame and is free to swing, thereby reducing resistance to wind and minimizing the vulnerability of the display assembly to wind damage. A mounting assembly is arranged to permit the display assembly to be removably mounted onto a support structure, such as atop a gas pump.



ERRATUM

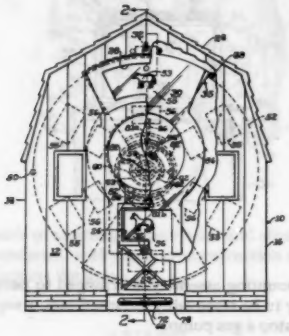
For Class 42—42 R see:
Patent No. 3,718,998

3,719,001
DOLL HOUSE FOR CITY CHILDREN
John C. Archer, 86 Prospect Park West, Brooklyn, N.Y.
Filed Dec. 22, 1969, Ser. No. 887,091
Int. Cl. A63b *33/00*
U.S. Cl. 46—12 2 Claims



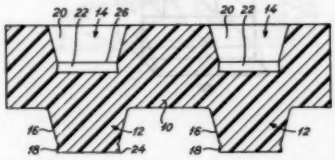
A doll house of rigid board material arranged to be supported from a wall by flexible hangers. The hangers are attached so as to participate in locking together the separable walls and floors of the doll house and are so located as to stabilize the doll house in the hung position by forcing it against the supporting wall. Removable floors are positioned in semi-rigid extruded plastic channels bonded to the walls of the doll house. Removable partitions are positioned in similar channels bonded to the floors. Walls and back are made separable through connections employing loose-pin hinges. A folding shelf to serve as a staging area for dolls and furnishings is provided at the bottom of the doll house. The walls and back are locked to the bottom floor by concealed catches to permit use of the doll house in the conventional bottom supported position without the flexible hangers. The preferred embodiment has three floors and eight rooms, is thirty inches high by thirty inches wide by nine inches deep, and is separable into flat panels of maximum dimensions of thirty inches by ten inches. All connections are such that the doll house may be assembled without the use of tools.

3,719,002
MUSICAL TOY
Hans Jernstrom, Northbrook, Ill., assignor to Sidney A. Tarrson Company, Dowagiac, Mich.
Filed June 11, 1971, Ser. No. 152,262
Int. Cl. A63h 33/00
U.S. Cl. 46—1 R 9 Claims



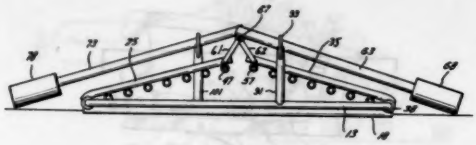
A simulated toy barn having a picture disc driven by a spring motor which includes a musical movement. The disc has illustrations of farm animals which may be viewed through openings in the front wall, and a shutter which alternately opens and closes for exposing and covering the illustrations as they pass in front of the openings. The shutter is driven through a slip clutch integral with the disc.

3,719,003
TOY BUILDING SET
Finn Skjoldborg, 6753 Agerbaek, Agerbaek, Denmark
Filed May 10, 1971, Ser. No. 141,760
Int. Cl. A63h 33/08
U.S. Cl. 46—25 11 Claims



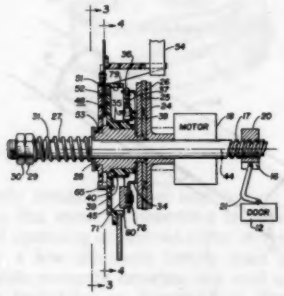
A toy building set comprising blocks made of a firm, somewhat resilient material, preferably of a rigid foam plastics, and adapted to be interconnected thereby that at least one tenon protruding from the surface of one block is brought to engage a corresponding recess in another block. Each said tenon comprising an inner part and an outer part. Said inner part having a length of between 60 and 90 percent, preferably between 75 and 85 percent, of the height of the tenon taken from the surface of the block and being provided with side faces outwardly approaching the longitudinal axis of the tenon, said inner part of the tenon preferably being formed as a truncated cone or as the frustum of a pyramid. Said outer part of said tenon having a length of between 40 and 10 percent, preferably between 25 and 15 percent of said height of said tenon and being provided with side faces forming an angle of less than 180°, but greater than 120° with the said side faces of said inner part of said tenon. Each said recess being over a depth corresponding to said height of said tenon conform with the latter and having the same dimensions as the said tenon.

3,719,004
CATTLE GUARDS
William E. Shivers, P.O. Box 183, Centerville, Tex.
Filed July 8, 1971, Ser. No. 160,624
Int. Cl. E05f 13/04
U.S. Cl. 49—131 2 Claims



Cattle guards having oppositely disposed pivotal racks, elevatable at the centers where the two racks are adjacent, whereby when the racks are pivotally elevated they present an obstacle to traverse by cattle and horses, and the like. The racks are elevated by weights, the weights being overcome by traverse of the racks by a motor vehicle, or the like, so that the racks are depressed to present a flat surface for passage of the vehicle. After the vehicle has passed the cattle guard, the racks are moved pivotally upward again by the weights.

3,719,005
DOOR OPERATOR REVERSING CONTROL
Alvin J. Carli, Sebring, Ohio, assignor to The Alliance Manufacturing Company, Inc., Alliance, Ohio
Filed Jan. 13, 1972, Ser. No. 217,605
Int. Cl. E05f 15/16
U.S. Cl. 49—28 17 Claims



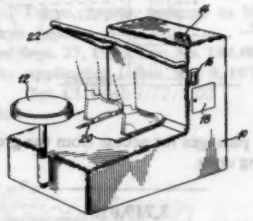
A garage door motor driven operator is disclosed which is capable of opening or closing the garage door and capable of automatically reversing the direction of movement of the door when it is moving in the closing direction should the door strike an obstruction which slows or stops the door. A load switch is sensitive to a slow-down of the door such as when an overload condition slows the door. This load switch gives a first impulse to control the motor energization circuit to stop the door. A torque switch is urged in a first direction by gravity acting on a weight and is urged in the opposite direction by a one-way clutch acting only in the closing direction of the door. Hence when the door is stopped there is no more torque through the one-way clutch and the gravity actuated weight actuates the torque switch to give a second impulse to again energize the door to establish a door opening movement. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,719,006

SKATE SHARPENING MACHINE

Roland Vezeau, Montreal, Quebec, Canada, assignor to Paul Smith and Joseph Julien Morel, Montreal, Quebec, Canada, a fractional part interest to each

Filed Aug. 3, 1970, Ser. No. 60,419
Int. Cl. B24b *19/00*
U.S. Cl. 51—34 A 11 Claims



A skate sharpening machine including a housing and means for clamping the blade of the skate at a fixed position on the housing. A carriage is slidably mounted in the housing and carries a power-driven grinder. The carriage is arranged to be moved back and forth in the housing and guide means conforming to the shape of the bottom of the blade are provided for guiding the grinder whereby the grinder follows the shape of the bottom of the blade when moved back and forth by the carriage.

3,719,007

WIRE STRIPPER WHEEL FOR TOUGH PLASTIC

Ralph E. Bevard, Fayetteville, N.Y., assignor to The Eraser Company, Inc., Syracuse, N.Y.

Filed Oct. 2, 1971, Ser. No. 186,012
Int. Cl. B24d *5/00, 7/00, 11/00*
U.S. Cl. 51—207 3 Claims

A wire stripper wheel, of the type having a plurality of layers of woven glass fibers impregnated with and bonded together with a rubber substance, has an additional layer at each end formed with a hard bonding substance such as epoxy resin or polyester. The hard layers cut through tough plastic insulation and hold the glass fibers compressed so they do not fray endwise of the wheel.

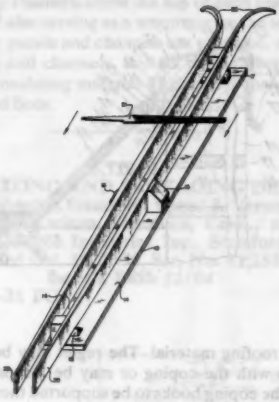
3,719,008

SKI SHARPENING VISE

Michael A. Mayers, P.O. Box 144, Kingston, N.H. 03848

Filed May 26, 1971, Ser. No. 146,892
Int. Cl. B24b *19/00*; C22b *11/00*
U.S. Cl. 51—228 2 Claims

A clamping arrangement for holding a pair of snow skis while sharpening in which a plurality of fixed uprights from an elongated base are arranged to distort the skis against their inherent elasticity with the skis spaced parallel and resting on edge; and a method for sharpening skis so held by abrading the exposed edges with an implement maintained at a predetermined angle to the exposed edges



by virtue of the alignment guide presented by the two edges themselves.

3,719,009

SANDBLASTING MOTOR STATOR SLOTS

Thomas L. Thompson, 1138 Nishey Lake Road S. W., Atlanta, Ga.

Filed Sept. 20, 1971, Ser. No. 182,096
Int. Cl. B24c *1/00*
U.S. Cl. 51—319 1 Claim

Method of removing material such as burned shellac, paper residue, insulation, dirt, grease, etc. from stator slots of electric motors preparatory to rewinding with a nozzle having an oblong hollow ceramic member which is force fitted at one end into a rubber stopper and having its other end beveled for fitting into the slots and a metal coupler for connecting the member to a suitable sand blasting source. The beveled end and oblong shape permit the nozzle to be easily inserted in the stator slots and to effectively remove the material in a short period of time without damage to the exterior of the slots in contrast to a nozzle having other shapes. Broken or worn ceramic members can be easily and quickly replaced by removal from the stopper and force fitting a new ceramic member in place.

3,719,010

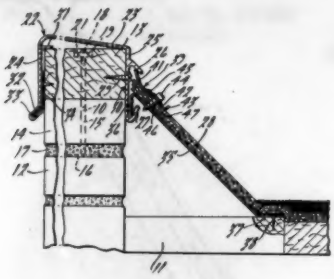
COPING AND SUPPORT THEREFOR

John B. Hickman, Birmingham, Mich., assignor to W. P. Hickman Company, Inc., Troy, Mich.

Filed April 19, 1971, Ser. No. 135,080
Int. Cl. E04d *1/36*
U.S. Cl. 52—60 7 Claims

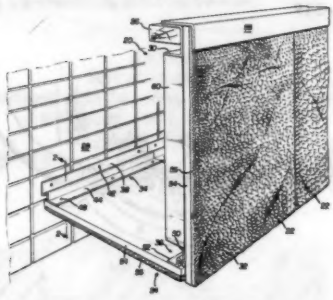
The coping is of inverted U-shape to extend over the top of a parapet, wall or the like which projects upwardly above the

roof deck. The coping is associated with a reglet which is supported on the inner face of the wall to provide a clamp and



seal for the roofing material. The reglet may be extruded in unit relation with the coping or may be a separate element onto which the coping hooks to be supported thereby.

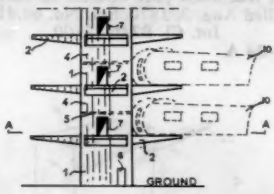
3,719,011
FRAMELESS FASCIA-SOFFIT ASSEMBLY
Cornelis J. De Lange, Farmington, Mich., assignor to Cement Enamel Development, Inc.
Filed Oct. 26, 1971, Ser. No. 191,983
Int. Cl. E04b *2/88*
U.S. Cl. 52—73 **10 Claims**



This disclosure relates to an architectural fascia-soffit assembly which is formed of a plurality of self-supporting pre-finished panels and providing a monolithic external appearance without internal framing. The vertical fascia panels are secured adjacent their upper ends to the supporting structure and the soffit panels are slidably supported between brackets secured to the free end of the fascia panel and the structural support, permitting quick assembly without skilled labor.

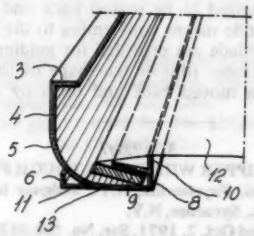
3,719,012
TOWER-CONSTRUCTION WITH OVERHANGS TO SUPPORT LIGHT-WEIGHT DWELLINGS
Felcial Laurent, 34, Place Jean Bart, 59 Dunkerque, France
Filed July 24, 1970, Ser. No. 57,947
Claims priority, application France, April 29, 1970, 7015657
Int. Cl. E04b *1/34*; E04b *1/02*
U.S. Cl. 52—73 **7 Claims**

A building comprising a central tower, and cantilever platforms located above the ground and extending horizontally outwardly from the tower. A light-weight self-supporting building unit is mounted and supported on each platform. The



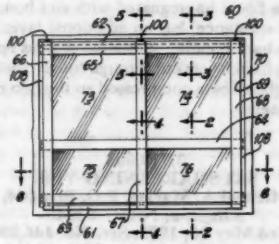
tower includes passages for access from the ground to the individual building units.

3,719,013
MOULDING FOR SUSPENSION MOUNTING AND DECORATION PURPOSES
Owe H. Blick, 11 Grindtorpsvagen, 183 32 Taby, Sweden
Filed Feb. 12, 1971, Ser. No. 114,971
Int. Cl. F04b *1/347*; F04c *3/32*
U.S. Cl. 52—222 **7 Claims**



A moulding for attachment to a wall or ceiling and receiving a strip wrapped in the end portion of a wet stretched or elastic ceiling covering or supporting a coffered ceiling for decorative purpose.

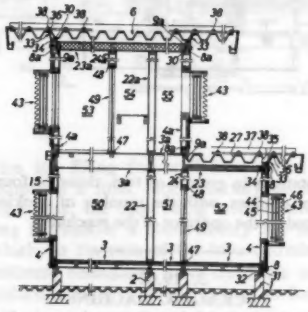
3,719,014
WALL SYSTEM
Ronald D. Sukolics, Elkhart, Ind., assignor to American Metal Climax, Inc., New York, N.Y.
Filed Aug. 3, 1971, Ser. No. 168,610
Int. Cl. E04b *2/88*
U.S. Cl. 52—235 **14 Claims**



There is provided an improved wall system wherein the structural portions of the vertical mullions are separate from the remaining portion of the wall. Thus, there is provided a structural mullion portion with horizontal

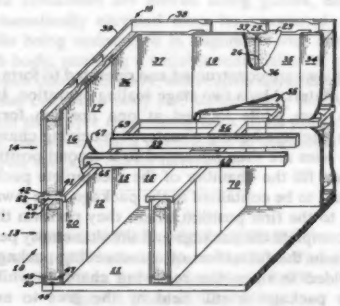
through members wherein the interior mullion portion snaps to the structural mullion portion to lock the through horizontal members in position. The shape of the structural portion may be varied without changing the other members of the system.

3,719,015
PREFABRICATED HOUSE
Chiyozi Misawa, Tokyo, Japan, assignor to Misawa Homes Co., Ltd., Tokyo, Japan
Filed Sept. 27, 1971, Ser. No. 184,007
Claims priority, application Japan, July 9, 1971, 46/51369
Int. Cl. E04b *2/72, 5/02*
U.S. Cl. 52—236 10 Claims



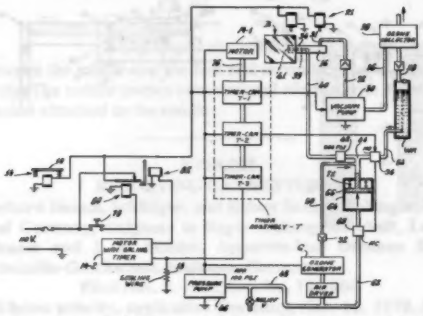
A prefabricated house comprising first story floor panels laid on foundation pedestals and fastened to said foundation pedestals by anchor bolts, first story wall panels individually having a frame formed at the coupling end with a notch joined to the frame of said first story panels at least by a bonding agent, second story floor panels individually joined to a notch formed in said first story wall panels at least by a bonding agent, second story wall panels individually joined to the coupling edge of said second story floor panels at least by a bonding agent, and a ceiling panel joined to the notches formed in the frames of said second story wall panels at least by a bonding agent, all said panels being completely united.

3,719,016
BUILDING PANELS AND CHANNELS
Russell H. Randolph, 4622 Devon Drive, Indianapolis, Ind.
Filed Sept. 3, 1970, Ser. No. 69,193
Int. Cl. E04b *2/08*
U.S. Cl. 52—236 6 Claims



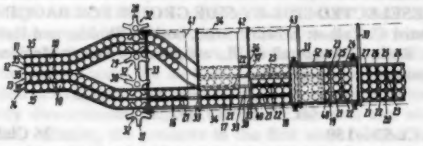
Prefabricated panels are erected with channels for constructing a building. Each panel has two fiber glass walls spaced apart by insulating material with offset flanges for interlocking with the adjacent panel. U-shaped channels mounted to the floor concealingly extend into the bottom of the panels. Cap channels cover the top of each panel, forming a raceway, and also serving as a mounting for the second-story panels. Corner panels and channels are provided, as well as T-shaped panels and channels. Rafters having fiber glass walls separated by insulating material fit over the channels to support the second floor.

3,719,017
STERILIZING AND PACKAGING DEVICE
Jonathan S. Shapiro, Stamford, Christ J. Verses, Fairfield, and Eskil L. Karlson, Stamford, Conn., assignors to Pollution Control Industries Inc., Stamford, Conn.
Filed Oct. 16, 1970, Ser. No. 81,255
Int. Cl. B65b *31/04*
U.S. Cl. 53—21 FC 9 Claims



An article to be sterilized is placed in a container from which air is withdrawn and replaced with a sterilizing medium, preferably ozone mist, to which all surfaces of the article are exposed, and the container is sealed leaving the article in the sterilizing medium. The exhausting and refilling and sealing are performed automatically, in timed relation, and the exhausting and refilling steps may be repeated one or more times before the sealing step.

3,719,018
METHOD AND APPARATUS FOR PACKING ARTICLES WITH LONGITUDINAL AND CROSS-MEMBERS
Heinz Focke, Moorstrasse 64, 3090 Verden, and Jurgen Bretthauer, Friedrich-Ebert-Str. 35, 2800 Bremen, both of Germany
Filed Feb. 18, 1971, Ser. No. 116,352
Claims priority, application Germany, Dec. 17, 1970, P 20 62 203.1
Int. Cl. B65b *21/06*
U.S. Cl. 53—26 14 Claims



A method and apparatus for inserting longitudinal members and cross-members between rows of articles. The articles are

formed into longitudinal rows on a conveyor and then formed into groups of a fixed number of transverse rows. After the groups are formed the longitudinal members and cross-members are mechanically inserted between the rows. The group with the members inserted between the rows is then passed to a packaging station.

3,719,019

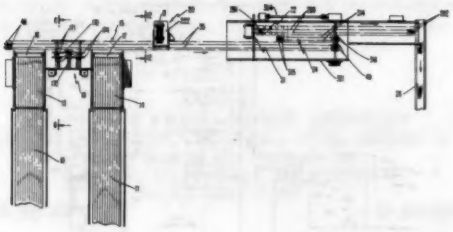
CONTINUOUS MOTION PACKAGING MACHINE

Robert J. Albrecht, River Edge, Arthur J. Griner, Wyckoff, and Frank V. N. Hoagland, Fair Lawn, N.J., assignors to Nabisco, Inc.

Filed Apr. 27, 1971, Ser. No. 137,124

Int. Cl. B65b *35/30, 35/50*

U.S. Cl. 53—159 **22 Claims**



Machinery wherein articles received from a pair of continuously driven plural line infeed conveyors are stacked in two rows upon a main conveyor continuously moving perpendicularly to the infeed conveyors, and groups of these stacks of articles are moved from the conveyor into synchronously moving cartons. An elongated vacuum head repetitively removes articles from the first infeed conveyor and stacks them in a row along the adjacent edge of the main conveyor. This first row is moved transversely across the main conveyor by cam operated pushers moving synchronously with the main conveyor. A second vacuum head at the second infeed conveyor forms the second row of stacked articles. A second set of pushers moves groups of the stacks transversely of the main conveyor through moving chutes into the cartons. The chutes and cartons are carried by conveyors parallel to and synchronized with the main conveyor. The cartons are stored flat in a stack, are removed singly, opened, and gripped between conveyor mounted supports. After being filled, the flaps of the carton are closed and sealed.

3,719,020

APPARATUS FOR SUPPLYING SLUGS OF COOKIES IN PRESELECTED SIDE-BY-SIDE GROUPS FOR BAGGING

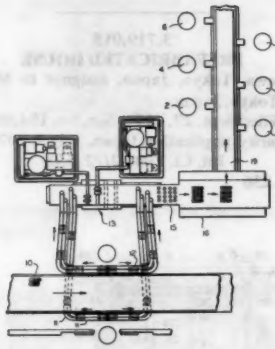
Richard C. Talbot; Edward Rose, both of Skokie, and Robert A. Roth, Chicago, all of Ill., assignors to Peters Machinery Company, Chicago, Ill.

Filed Aug. 20, 1971, Ser. No. 173,473

Int. Cl. B65b *35/32, 39/00*

U.S. Cl. 53—159 **26 Claims**

Apparatus for bagging slugs of cookies in side-by-side relation, in preselected groups including a slug conveyor for supplying slugs of cookies from a sandwiching and counting apparatus to a series of bagging or wrapping stations, so arranged as to accommodate the selection of any desired number of stations, and to supply the cookies in a continuous supply to the



preselected stations in groups of two, three or four side-by-side groups of cookies, with the number of cookies in each slug preselected by the operator of the machine.

3,719,021

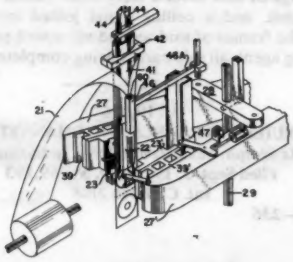
PACKAGING MACHINE

Harry Rosenberg, Philadelphia, Pa., assignor to New Jersey Machine Corporation, Hoboken, N.J.

Division of Ser. No. 498,354, Oct. 20, 1965, Pat. No. 3,589,913. This application Feb. 11, 1971, Ser. No. 114,635

Int. Cl. B65b *9/08*

U.S. Cl. 53—180 **6 Claims**

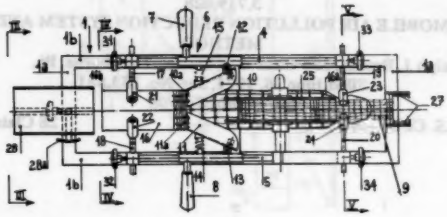


Sealing jaws are constructed and operated to form packages from ply material by a two stage sealing operation. In the first state the jaws while located at one position form an incomplete package having a material receiving chamber. The jaws and plies are then advanced to a second position where mechanism fill the chamber of the incomplete package with the product to be contained in the package. The jaws are then returned to the first position where they perform the second stage to complete the package and simultaneously perform the first stage in the formation of a succeeding package. Means are provided to open the receiving chamber while the incomplete package is still held by the jaws to enable the product to be inserted therein. A saw tooth cutter is employed to weaken the ply material between adjacent packages and to completely sever a predetermined number of them.

3,719,022
DEVICE FOR FILLING FOODSTUFF INTO NETTED CONTAINERS

Vittoria Cherio and Giuseppe Mignone, both of Valle San Matteo, Cisterna d'Asti, Italy

Filed Nov. 4, 1971, Ser. No. 195,619
Claims priority, application Italy, Nov. 7, 1970, 70,711/70
Int. Cl. B65b 5/04
U.S. Cl. 53—255 6 Claims

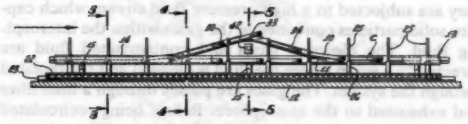


A device for filling foodstuff into netted containers, which comprises a filler tube centrally positioned on a supporting frame, the tube being telescopically mounted and having thereabout a continuously fed and gathered netting which, as the ram of the tube extrudes the foodstuff therefrom, disengages itself from the tube and becomes uniformly filled with the extrudate foodstuff.

3,719,023
APPARATUS FOR ASEPTICALLY FILLING INITIALLY COVERED CONTAINERS

Daniel E. Richardson, 16910 Bollinger Drive, Pacific Palisades, Calif.

Filed April 21, 1971, Ser. No. 135,882
Int. Cl. B65b 43/40
U.S. Cl. 53—381 A 16 Claims



Covered containers are moved along guides, each cover being automatically elevated from its associated container body while being maintained in alignment with and directly over such body, enabling a suitable material to be dispensed into the open container body, whereupon simultaneous movement of the container body and cover along the guide continues with the cover descending back to its position closing the body, the cover being maintained in alignment with and directly over the body during its descent.

3,719,024
NON-GIRTH SADDLE ASSEMBLY

Stacy F. Searl, 1689 National, Space 41, Chula Vista, Calif.

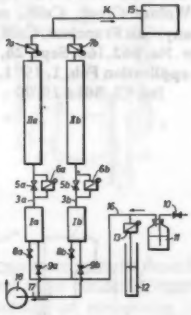
Filed Nov. 8, 1971, Ser. No. 196,636
Int. Cl. B68c 01/02, 01/14
U.S. Cl. 54—44 3 Claims

A non-girth saddle assembly adapted for being removably attached to a horse's front legs. The saddle has first and second leg bands attached to the horse's first and second front legs, respectively, with at least first and second straps coupled between the saddle and the first and second leg bands, respectively. The saddle carries conventional stirrups with a pad and blanket attached to the saddle.

3,719,025
RESOLVING GAS MIXTURES

Gerhard Heinze, Schildgen, and Reiner Sarnes, Nellingen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and J. F. Mahler, Apparate-Und Ofenbau Kommandite-Gesellschaft, Esslingen, Germany

Filed Nov. 8, 1971, Ser. No. 196,604
Claims priority, application Germany, Nov. 11, 1970, P 20 55 425.0
Int. Cl. B01d 53/04
U.S. Cl. 55—31 10 Claims



In the resolution of air containing water vapor by the pressure-variation technique wherein the air is passed successively through first and second separation zones, the water vapor being removed from the air in the first zone and the nitrogen being selectively removed from the balance of the air mixture in the second zone, the air leaving the second zone being enriched in oxygen and improvement which comprises intermittently discontinuing passage of the air the first and second zones, reducing the pressure in the first zone relative to the second zone by withdrawing air from said first zone, whereby the nitrogen adsorbed in said second zone is desorbed, passes into said first zone, replaces the water vapor therein and the now desorbed, previously adsorbed water vapor in the first

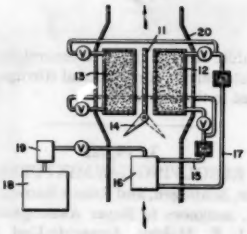
zone is withdrawn from the first zone, discontinuing the reduction of pressure in said first zone, reinitiating passage of air to said first zone and from there into said second zone, and temporarily delaying the flow of air from said first zone into said second zone so that the pressure in said first zone builds up prior to build-up of pressure in said second zone. The delay of air flow can be due to a complete interruption of flow or a throttling of flow from the first to the second zone. Other gas mixtures may be similarly resolved.

3,719,026

SELECTIVE SORPTION OF NON-POLAR MOLECULES

Leonard B. Sand, Holden, Mass., assignor to Zeochem Corporation, Worcester, Mass.

Filed June 1, 1971, Ser. No. 148,508
Int. Cl. B01d *53/04*; **B01j** *11/40*
U.S. Cl. 55—33 **8 Claims**



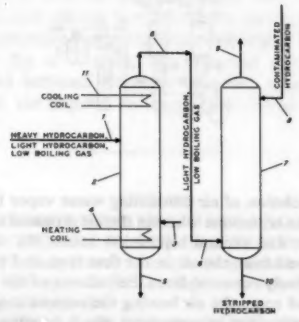
This invention relates to a process for the extraction of non-polar substances from mixtures of polar and non-polar substances by sorbing the non-polar substances on aluminum-deficient molecular sieve zeolites.

3,719,027

HYDROCARBON STRIPPING PROCESS

Arnold I. Salka, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 862,163, Sept. 26, 1969, Pat. No. 3,637,485. This application Feb. 1, 1971, Ser. No. 119,367
Int. Cl. B01d *19/00*
U.S. Cl. 55—51 **3 Claims**



A process for stripping a first and a second hydrocarbon stream, wherein said first hydrocarbon stream comprises a very low boiling gas, light hydrocarbons, and heavier hydrocarbons, and said second hydrocarbon stream contains a contaminant and heavy hydrocarbons, which comprises:

a. stripping said first hydrocarbon stream in a first stripping column to obtain a stripper stream comprising said heavier hydrocarbons and an overhead stream comprising said very low boiling gas and light hydrocarbons,

b. using said overhead stream to strip said contaminant out of said second hydrocarbon stream in a second stripping column, and

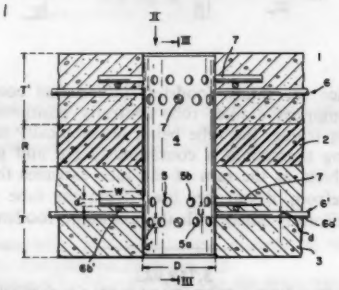
c. maintaining the first stripping column at a pressure at least 10 psi higher than the pressure in the second stripping column.

3,719,028

MOBILE AIR POLLUTION REDUCTION SYSTEM AND METHOD

Ralph J. Brooks, 186 Clearview Avenue, Langhorne, Pa.

Filed June 16, 1971, Ser. No. 153,581
Int. Cl. B01d *47/06*
U.S. Cl. 55—85 **28 Claims**



A mobile air pollution reduction method and system which may be incorporated in a truck body to be disengaged from a main chassis and left at an operating station. In place, the unit is connected through inlet and exhaust conduits to a chimney, stack or flue. The inlet conduit includes an interrupt mechanism to deflect waste gases into the unit. Gases injected to the unit are forced through a predetermined path where they are subjected to a high pressure fluid stream which capture solid particles contained in the gases within the intercepting fluid. The cleansed gases and contaminated fluid are directed to a sump where the fluid is cleaned and recirculated through the system. The gases are passes through a final filter and exhausted to the atmosphere. Before being recirculated the fluid may be passed into a cooling system. Where incoming waste gases are only partially burned, a combustion chamber may be added to the system to ignite remaining unburned particles in the waste gases.

3,719,029

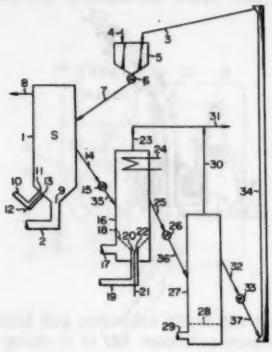
PROCESS FOR TREATING GASEOUS PRODUCTS OBTAINED BY THERMAL CRACKING OF HYDROCARBONS

Yuichi Suzukawa; Hisashi Kono; Kenji Terai; Atushi Kuribayashi; Yutaka Tamura; Hiroshi Fujii, and Muneki Saito, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube-shi, Yamaguchi-ken, Japan

Filed March 23, 1971, Ser. No. 127,224
Int. Cl. B01d *47/06*
U.S. Cl. 55—91 **6 Claims**

A process for removing from a cracked gas product carbon and tar contained therein, which comprises spouting a high temperature cracked gas product containing carbon and tar, formed by thermal cracking of a hydrocarbon, from the bottom of a vessel in which inorganic solid particles are con-

tained, thus forming a spouted bed of the solid particles in the vessel, and spraying water or a liquid hydrocarbon in the so formed spouted bed of the solid particles to thereby quench



the cracked gas product and to simultaneously allow the carbon and tar contained in the cracked gas product to stick and adhere onto the surface of the solid particles.

3,719,030

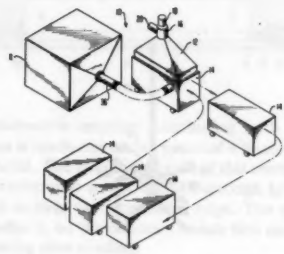
PLASTIC POWDER SPRAYING RECOVERY METHOD AND APPARATUS

James C. Blankemeyer, Columbus Grove; Daniel E. Blankemeyer, Ottawa, and Robert L. Blankemeyer, Fort Jennings, all of Ohio, assignors to Metokote Precision, Inc., Lima, Ohio

Filed March 12, 1971, Ser. No. 123,515

Int. Cl. B01d *46/04*

U.S. Cl. 55—97 **9 Claims**



A method and apparatus for reclaiming excess powder spray in a coating process utilizes portable filtering units connected between a spray booth and an exhausting hood. Flexible bellows and a camming lock permit a rapid connection of a different filtering unit for each color plastic or type of plastic to prevent contamination.

3,719,031

ELECTRIC FIELD DIRECTED CONTROL OF DUST IN ELECTROSTATIC PRECIPITATORS

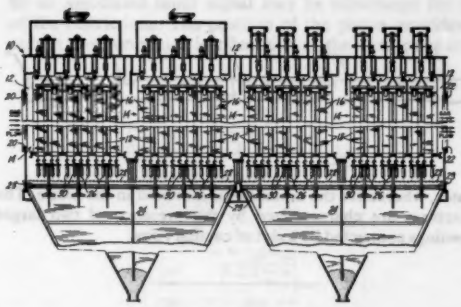
Peter C. Gelfand, Lebanon, Pa., assignor to Envirotech Corporation, Salt Lake City, Utah

Filed June 8, 1971, Ser. No. 151,005

Int. Cl. B03c *3/00*

U.S. Cl. 55—136 **7 Claims**

In an electrostatic precipitator, a downwardly directed corona discharge is produced at the entrance to dust collecting hoppers attached at the bottom of the precipitator chamber, the corona discharge being produced by an array of corona discharge points connected to a high voltage source



and a grounded electrode grid positioned below the corona points near the hopper entrance either in the hopper or in the chamber.

3,719,032

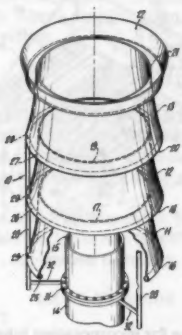
INDUCTION CONDENSER

George H. Cash, 8 Holly Lane, Londonderry, N.H.

Filed Oct. 26, 1971, Ser. No. 192,017

Int. Cl. B01d *45/02*

U.S. Cl. 55—264 **10 Claims**



A plurality of low pressure venturis mounted at the top of a stack draw in ambient air to condense vapors in the stack effluents, thus eliminating or minimizing offensive opaque smoke and vapor plumes. Water soluble gases and heavy particulates are also condensed and removed.

3,719,033

DEVICE FOR REGULATING THE HUMIDITY OF THE AIR IN A MUSICAL INSTRUMENT

Jean A. Den Boer, Wittevrouwensingel 94, Utrecht, Netherlands

Continuation-in-part of Ser. No. 668,483, Sept. 18, 1967, abandoned. This application July 19, 1971, Ser. No. 163,745

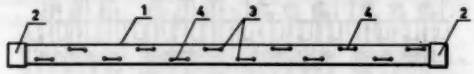
Claims priority, application Netherlands, Sept. 22, 1966, 66/13380

Int. Cl. B01d *53/04*

U.S. Cl. 55—387 **7 Claims**

A device for regulating the humidity of the air in a piano, comprising a container with apertures, filled with a moisture

absorbing material, said material being a mixture of diatomaceous earth, asbestos powder and viscose sponge and being saturated with water by immersing the container in



water, whereafter the container is mounted in the piano. The apertures are characterized by the presence of two larger openings connected by a slot of capillary size.

3,719,034

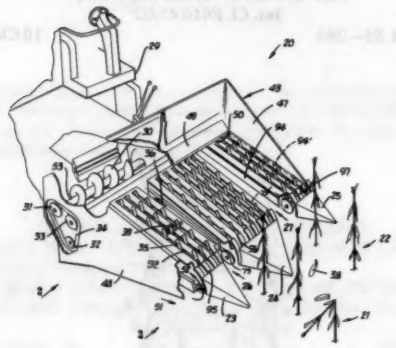
HARVESTER SWEEPER

Roger J. Lange, R. R. 1, Brockton, Ill.

Filed Sept. 8, 1970, Ser. No. 70,307

Int. Cl. A01d *45/02*

U.S. Cl. 56—119 **5 Claims**



A sweeping device for incorporation into a harvester to pick ears of corn off the ground. Rows of flexible fingers are attached to bars supported between endless chains. Sprockets drive the chains thereby forcing the fingers across the ground and through slotted support plates to a shucking mechanism. Slotted wrap around plates are attached to the front of the harvester trapping the ears of corn as they are lifted off the ground by the fingers.

3,719,035

TEXTILE APPARATUS

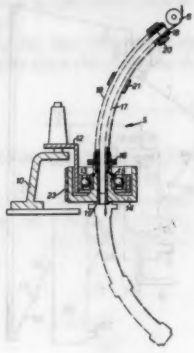
Reginald Selby Gilchrist, 131 Handside Lane, Welwyn Garden City, England

Filed May 5, 1971, Ser. No. 140,372

Int. Cl. D02g *1/04*; D01h *13/28*

U.S. Cl. 57—77.3 **13 Claims**

The specification discloses methods and apparatus for twisting, and specifically false twisting, yarns wherein a travelling yarn is constrained to take up a curved path in contact with a rotating curved tube. This causes the yarn to be twisted by engagement with the interior surface of the tube. All parts of the yarn in contact with the tube are twisted at substantially the



same speed since the contact path is substantially parallel to the rotary axis of the tube.

3,719,036

DEVICE FOR USE IN CONNECTION WITH SPINNING AND TWISTING MACHINES FOR GUIDING THE THREAD FROM THE DRAFTING MECHANISM TO THE SPINDLE

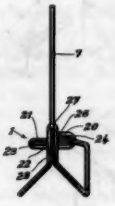
Gunther Preisser, Strassburger Allee 39, 407 Rheydt-Odenkirchen, Germany

Filed Dec. 14, 1970, Ser. No. 97,716

Claims priority, application Germany, Oct. 15, 1969, P 19 51 891.3; Sept. 26, 1970, P 20 47 541.6

Int. Cl. D01h *13/04*; B65h *57/08*

U.S. Cl. 57—106 **14 Claims**



A thread guide for guiding the thread in a spinning and twisting machine during the vertical travel of the thread from the drafting mechanism to the spindle, the guide comprising superimposed pairs of guide bars that receive the thread between the bars of each pair with one pair of bars generally parallel to the length of the machine and the other pair of bars generally perpendicular to the length of the machine.

3,719,037

WORKWATCH

David R. Williams, East Moriches, N.Y., assignor of a fractional part interest to The Raymond Lee Organization, Inc., New York, N.Y.

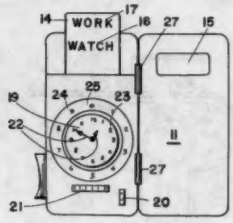
Filed May 24, 1972, Ser. No. 256,461

Int. Cl. G04f *7/04*

U.S. Cl. 58—74 **5 Claims**

A stop watch for the purpose of computing the charge for personal services, and particularly services of a repair

nature which are charged in proportion to the time involved. The watch is fitted with a clip for attachment to a pocket or belt, with a hinged cover which encloses and protects the operating reset and winding controls and also enclose the transparent watch face. A colored or



marked metal flag protrudes above the top of the device when the watch is in the recording position. Rings, with markings that convert the indicated elapsed time to a money charge, may be snapped into the circular bezel surrounding the watch face.

3,719,038

WATCHCASE

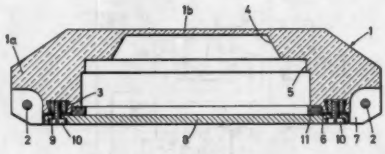
Hans Ulrich Klingenberg, St. Niklaus near Merzligen, Switzerland

Filed June 21, 1971, Ser. No. 154,761

Claims priority, application Switzerland, June 25, 1970, 9665/70

Int. Cl. G04b *37/00, 39/00*

U.S. Cl. 58—88 R **3 Claims**



A comprehensive member combining both the case-band and the glass is made out of one piece of a homogeneous translucent material. The peripheral wall of this member surrounds the watch movement and it is thick enough to be practically opaque and to hide the movement edge. The central portion of this member is, on the contrary, made thin enough to form a screen allowing time reading.

3,719,039

FLUID ANALOG CONTROL APPARATUS

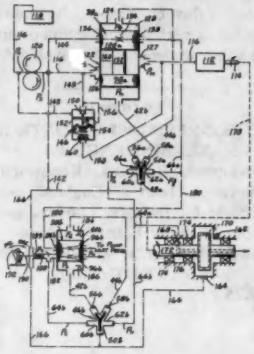
George R. Howland, South Bend, Ind., assignor to The Bendix Corporation

Original application Nov. 18, 1968, Ser. No. 776,832, now Patent No. 3,587,606. Divided and this application Jan. 22, 1971, Ser. No. 109,001

Int. Cl. F02c *9/04*

U.S. Cl. 60—39.28 R **6 Claims**

A bridge circuit having at least two parallel flow paths each of which paths are provided with a pair of series flow restrictions having a common flow area ratio. A floating or integrating piston connected to vary the effective flow area of one of the restrictions is responsive to the fluid pressure intermediate each pair of series restrictions which pressures are varied in accordance with variations in effective flow area of one or more of said restrictions in response to an associated input signal or signals applied thereto. Motion of the piston in response to a pressure differential between the intermediate pressures results in a corresponding change in flow area of the one restriction connected thereto to establish equalization of the intermediate pressures. A plurality of variable area parallel flow restrictions each of which is controlled by an associated input signal may be substituted for one of the restrictions. The position of the piston provides an output position which is a function of the sum, product or



ratio of the various inputs controlling the restrictions. In addition, the piston may be connected to control the effective flow area of a restriction in a second bridge circuit similar to that described to extend the central functions of the fluidic system as desired. Pure fluid amplifying devices are suitably connected in the fluid circuitry to provide signal amplification thereby improving response of the piston.

3,719,040

GAS GENERATOR AND TUBULAR SOLID CHARGE CONSTRUCTION THEREFORE

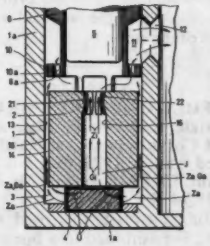
Heinrich Hofmann, Grobenzell, Germany, assignor to Messerschmitt-Bolkow GmbH, Ottobrunn near Munich, Germany

Division of Ser. No. 806,898, March 13, 1969. This application Dec. 10, 1970, Ser. No. 97,029

Claims priority, application Germany, April 30, 1968, P 17 51 268.4

Int. Cl. F02k *9/04*

U.S. Cl. 60—39.47 **7 Claims**



A device for generating gases such as a combustion chamber of a rocket engine includes a solid fuel propellant in the form of a substantially cylindrical hollow main charge having a central bore therethrough and located within the combustion chamber at a spaced location from the interior walls thereof and between a detonating charge and a priming

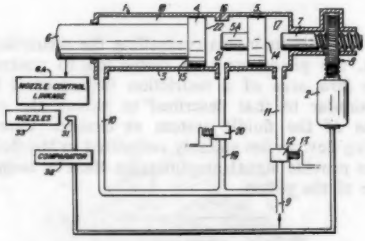
charge. The end of the main charge facing the detonating charge is located adjacent an outlet for the combustion chamber and it is formed in a manner to ensure that some of the ignition and combustion gases which are formed by ignition of the center of the main charge will flow downwardly through the opposite end of the main charge past the priming charge and around the outside of the main charge to cause and maintain ignition of this outside portion of the main charge. The remaining portion of the gases will flow directly from the end of the charge adjacent the detonator to the outlet. To accomplish the desired flow conditions, the main charge itself is formed with a total or partial constriction or nozzle portion at its end which is adjacent the combustion chamber outlet.

3,719,041

TEMPERATURE-RESPONSIVE CONTROL FOR GAS TURBINE ENGINES

Mark Gary Sedgwick Barnard, Kenilworth, and Leslie Airey, Farnborough, both of England, assignors to The Secretary of State for Defence, London, and Leyland Gas Turbines Limited, Solihull, both of England

Filed Feb. 5, 1971, Ser. No. 112,885
Int. Cl. F02c *9/00*
U.S. Cl. 60—39.25 **6 Claims**



A two-shaft gas turbine engine having variable-area nozzles and a power-operated nozzle-actuating mechanism the rate of movement of which is so correlated with the operation of feedback control means, activated by an error signal derived from the difference between the engine operating temperature and a preset datum, that the time needed for completion of a movement of the nozzles sufficient to produce a significant increase in the operating temperature exceeds the time during which the feedback control means is in operation.

The nozzle actuating mechanism comprises a cylinder containing a primary piston connected to the nozzles, a movable stop, and a free piston between the primary piston and the stop. A motor activated by the feedback control means regulates the position of the stop.

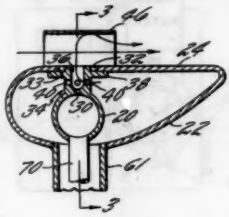
3,719,042

FUEL INJECTION MEANS

John Chamberlain, Lake Park, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Aug. 4, 1970, Ser. No. 60,824
Int. Cl. F02k *3/10*; F23r *1/04*
U.S. Cl. 60—39.74 R **8 Claims**

A fuel injecting means is disclosed wherein a dual injection manifold is positioned in a burner, said dual manifold having an annular inner fuel manifold within an outer air, or gas, manifold. Separate fuel and gas manifolds are located on the exterior of said burner and direct their respective flows to the proper manifold of the dual manifold by a plurality of pairs of conduits including a coaxial conduit section extending from the casing of the burner into the dual manifold. The inner conduit of said coaxial conduit being connected to the fuel manifold and the outer conduit being connected to the air, or gas, manifold. The inner manifold of said dual manifold having a plurality of openings each opening being axially aligned with an opening in the outer manifold so that the fuel and air, or gas, flow are directed through a common



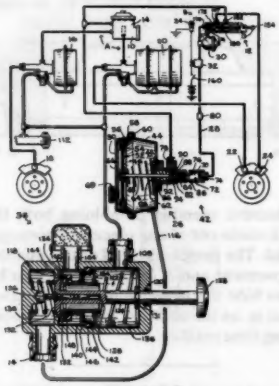
opening into the burner onto a splash plate. A splash plate is spaced from each opening on said outer manifold. In a modification a passageway is provided between each opening in the inner manifold and the edge of said wall portion of said second manifold.

3,719,043

VACUUM POWERED SPRING BRAKE

Maxwell L. Cripe, South Bend, Ind., assignor to The Bendix Corporation

Filed Mar. 19, 1971, Ser. No. 126,020
Int. Cl. F15b *7/00*; F16d *65/24*; B60t *13/00*
U.S. Cl. 60—54.5 P **5 Claims**



A dual power braking system having a service brake and spring brakes for emergency and parking, with the spring brake being normally rendered inoperative by a fluidic pressure force overcoming a spring to prevent rotatable frictional surfaces from contacting. To operate the spring brake, an actuator valve diverts the flow of fluid under pressure from acting on the spring which urges the frictional surfaces together to bring about braking. An indicator connector to the fluid supply conduit going to the spring brakes will indicate the pressure mode available. When the indicated pressure mode is below a predetermined value, a pump will be engaged to pressurize the operating fluid. The pump is controlled by an operator who manually regulates a value to alternately supply vacuum and atmospheric pressure to the front chamber of

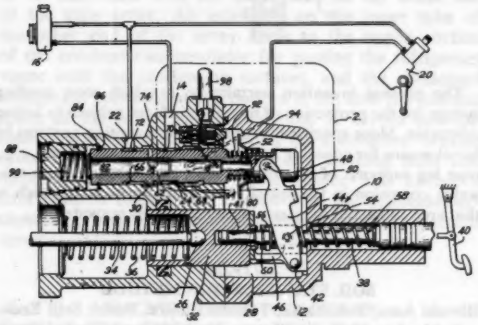
a pump housing. The housing is divided by a diaphragm and atmospheric pressure is freely available on the rear of the diaphragm. By alternately supplying vacuum and atmospheric pressure to the front chamber, the diaphragm and an attached piston contained in a bore will reciprocate to pressurize the fluid going to the supply conduit. The operator will be required to manually modulate the valve until the pressure mode is sufficient to hold the frictional surfaces out of contact.

3,719,044

HYBRID BRAKE BOOSTER CONTROL VALVE

Lloyd G. Bach, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Aug. 18, 1971, Ser. No. 172,803
Int. Cl. F01b *25/00*; F15b *1/02*
U.S. Cl. 60—51 **10 Claims**



A hydraulic brake booster is disclosed which is normally operated by fluid pressure delivered to the booster from the vehicle's power steering pump. However, an auxiliary fluid supply is also provided which delivers pressurized fluid to the booster when the vehicle's power steering pump fails to operate, due either to a malfunction of the latter or to termination of operation of the vehicle's engine while the vehicle is in motion. The auxiliary fluid supply includes an accumulator which is charged by pressurized fluid from the power steering pump while the latter operates normally. A conduit is provided which communicates the accumulator directly into the booster pressure chamber. A control valve is provided which controls communication of fluid from the accumulator to the pressure chamber. The control valve is operated by the operator-operated spool which also controls fluid communication between the power steering pump and the booster upon actuation of the spool valve after operation of the power steering pump terminates. The control valve is responsive to the fluid pressure level in the pressure chamber such that the control valve remains closed as long as high pressure fluid exists in the pressure chamber, but may be easily operated when a relatively low pressure level exists in the pressure chamber.

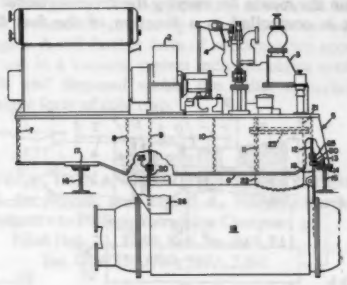
3,719,045

TURBINE-GENERATOR AND CONDENSER BASE FOR SHIPBOARD INSTALLATION

Herbert N. Hoffman, Lunenburg, Mass., assignor to General Electric Company

Filed Mar. 26, 1971, Ser. No. 128,287
Int. Cl. F01k *9/00*
U.S. Cl. 60—95 A **4 Claims**

A design of an attachment of a condenser to the base structure of a turbine-generator set whereby the condenser provides torsional rigidity to the base, the design being such that no accurate machining or accurate fitting of the attachment surfaces is required and such that the assembly of the condenser to a completely assembled turbine-generator set can be performed with the latter resting on its intended foundation, such as the hull of a ship.

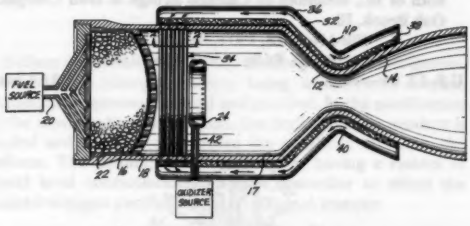


3,719,046

ROCKET ENGINE COOLING SYSTEM

George S. Sutherland, Mercer Island, and Donald L. Emmons, Issaquah, both of Wash., assignors to Rocket Research Corporation, Redmond, Wash.

Filed July 2, 1970, Ser. No. 52,020
Int. Cl. F02k *9/02*, *11/02*
U.S. Cl. 60—206 **13 Claims**



An oxidizer, such as nitrogen tetroxide or fluorine, is introduced into a reaction chamber in the path of the decomposition products of hydrazine and reacts therewith to form high temperature, high thrust propulsive gases. A heat pipe surrounds the reaction chamber and includes a wick saturated with a volatile liquid, such as liquid lithium, which liquid is vaporized thereby removing heat from the chamber wall. The vaporized fluid is directed through a heat exchanger and is therein condensed back into a liquid state.

3,719,047

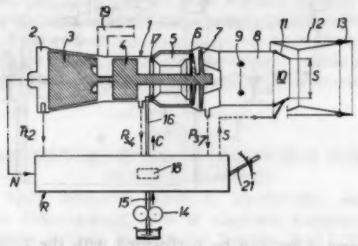
CONTROL DEVICES FOR GAS TURBINE POWER PLANTS

Jean Paul Francois Gilbert Briotet, Le Mee-sur-Seine, and Armand Ravagli, Ivry, both of France, assignors to Societe Nationale D'Etude et de Construction de Monteurs d'Aviation, Paris, France

Filed Feb. 3, 1971, Ser. No. 112,272
Claims priority, application France, Feb. 4, 1970, 7003923
Int. Cl. F02k *11/00*
U.S. Cl. 60—239 **12 Claims**

A control device for a gas turbine power plant of the type comprising a compressor, a combustion chamber supplied with air coming from the compressor and with fuel, a turbine supplied with combustion gases coming from the combustion

chamber, and a nozzle which discharges the combustion gases coming from the turbine, said control device comprising means for metering the fuel flow to the combustion chamber and means for varying the cross-sectional area of the nozzle, wherein the means for varying the cross-sectional area of the nozzle is controlled as a function of the fuel flow rate C



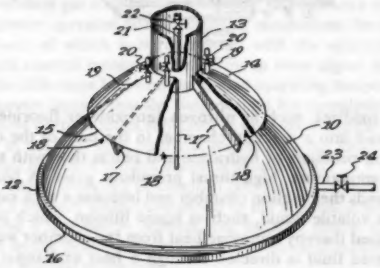
delivered to the combustion chamber, the static air pressure P_{s_4} at exit from the compressor, and the static gas pressure P_{s_7} at the turbine exit, so that at least under certain conditions of operation, an output quantity defined by the expression $c/(\beta P_{s_4} - P_{s_7})$, in which β designates a constant coefficient of reduction, has a desired predetermined value.

3,719,048

OFFSHORE STRUCTURE WITH STATIC AND DYNAMIC STABILIZATION SHELL

Christian Arne, Chicago, and Erik E. Brogren, Glen Ellyn, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Nov. 18, 1971, Ser. No. 199,855
Int. Cl. B65g 5/00; E02b 17/00
U.S. Cl. 61—46.5 **16 Claims**



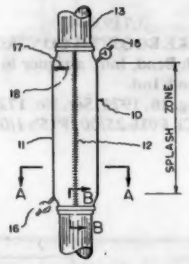
An offshore structure floatable to a site for positioning by submergence on the floor of a body of water and subsequently raising it having a domed roof shell enclosing a volume therebelow, said roof shell being open at the bottom and having a peripheral ballasting ring which provides a substantial righting moment against significant tilting of the structure while the ballasting ring is at least partly above water level, a stabilization shell mounted adjacent to the upper part of the roof shell in fixed position relative thereto by connecting means joined to the roof shell, said stabilization shell being open at the bottom and enclosing a volume between the shells, a plurality of spaced apart bulkheads extending vertically between the two shells thereby dividing the space between the shells into compartments, and means to remove air from beneath the roof shell and from said compartments in submerging the structure.

3,719,049

CORROSION PREVENTING APPARATUS AND METHOD

Clarence W. Shaw, Metairie, and George R. Smith, Ponchatoula, both of La., assignors to Donald W. Durant, Covington, La., by said Smith

Filed Dec. 22, 1969, Ser. No. 873,755
Int. Cl. E02d 5/60; E04b 1/64
U.S. Cl. 61—54 **5 Claims**



The present invention pertains to a splash zone coating system for the protection of metallic surfaces subject to active corrosion. More specifically, the present invention pertains to novel means for covering and coating metallic structures, e.g., pipe leg supports of an offshore oil well structure, from seawater corrosion in the splash zone of the structure which is that area subjected to intermittent contact by seawater.

3,719,050

SOIL STABILIZATION METHOD

Hiroshi Asao, Yokohama; Takeshi Hihara, Zushi; Seiji Endo, Yokosuka; Chikashi Furuya, Kashiwa, and Kouhei Sano, Yokohama, all of Japan, assignors to Toho Chemical Industry Co., Ltd., Tokyo, Japan

Filed June 1, 1970, Ser. No. 42,477
Int. Cl. E02d 3/14; E21b 33/138
U.S. Cl. 61—36 R **20 Claims**

A soil stabilization method comprising injecting a polyurethane prepolymer having terminal isocyanate groups, alone or in admixture with water, obtained by the reaction of compound having at least two terminal hydroxy groups and a polyoxyalkylene chain having a molecular weight of from 300 to 20,000 with a polyisocyanate compound in a molar amount at least equal to the number of said hydroxyl groups and reacting said polyurethane prepolymer with water in the soil to solidify the same. The gelling time of said polyurethane prepolymer is shortened by the addition of a basic material and prolonged by the addition of an acidic material or a chelate compound. Said method provides simultaneously an excellent soil stabilizing effect and a water-cutting off effect. Injection of a mixture of said polyurethane prepolymer and inorganic materials, for example, clay, cement and the like into the soil results in the formation of an elastomer which has extremely excellent strength and is strongly adhered to the soil, whereby the soil is markedly improved.

3,719,051

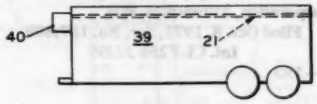
TRANSPORTABLE REFRIGERATION SYSTEM

Stephen F. Malaker, Mountainside, N.J., assignor to Romayne Corporation, Mountainside, N.J.

Continuation-in-part of application Ser. No. 8,537, Feb. 4, 1970. This application Oct. 26, 1971, Ser. No. 192,128
Int. Cl. F25p 9/00; F25d 17/00
U.S. Cl. 62—6 **9 Claims**

A transportable refrigeration system for cooling an enclosed area comprises a transportable vehicle having an enclosed area to be cooled, and a tube array disposed in the area serves as the cooler. It consists of two spaced

concentric tubes with the outer tube closed on one end. This array serves to feed liquid refrigerant (B.Pt. 50° C. to −50° C.), mainly by capillary action, through the annular space between the tubes, wherein evaporation of the refrigerant effects a cooling action and the space within the inner tube serves to collect separated vapor emitted by the refrigerant during the cooling operation. An enclosed condenser-accumulator containing a multiplicity of condensing surfaces and having a thermal connection serves as the condenser and receptacle for the refrigerant. It has an opening near its bottom designed



to be connected with the outer tube at the other end of the tube array. An extension on the inner tube of the other end of the array leads to the upper portion of the condenser-accumulator for passing the refrigerant vapor over the condensing surfaces, and the condensed refrigerant collected at the bottom is fed into the annular space of the array for recirculation. A driven two-cylinder cryogenic engine operating on a modified Stirling cycle and using a fixed gas as the working fluid and disposed outside the area to be cooled and having a cold head in thermal connection with the condenser-accumulator, serves as the cooling means for the refrigerant vapor.

3,719,052

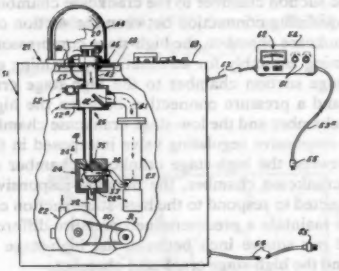
VACUUM SYSTEM COLD TRAP

Gerald W. White, 5835 Elm Lawn, Dallas, Tex.

Filed May 4, 1971, Ser. No. 140,135

Int. Cl. B01d *5/00*

U.S. Cl. 62—3 **7 Claims**



A cold trap for use in a vacuum system for minimizing migration of oil and other molecular particles therein. In each form of cold trap disclosed thermoelectric devices are used to produce cold surfaces on optically dense baffles for the condensation process. In particular, Peltier cells are connected with condensation plates within the vacuum space and with a heat sink for dissipation of heat energy removed from the cold condensation plates. The Peltier cells have cold junctions connected with the condensation plates and hot junctions connected with the heat sink. In one form of the device, the condensation plates are supported within the vacuum working space of a bell jar connected with an oil diffusion pump for producing a high vacuum in the bell jar by a conduit member defining a flow passage around the plates. A heat sink base on which the Peltier cells are mounted is connected with a heat dissipating base plate around the conduit between the bell jar and the oil diffusion pump. In another form of particle condensation apparatus, a baffle assembly connected with the cold junctions of Peltier cells is supported in a conduit between an oil diffusion pump and a space in which a vacuum is induced by the pump. The hot junctions of the cells are connected with a member cooled by a fluid, such as water or liquid nitrogen. A still further form of condensation apparatus or trap for use in a vacuum system includes plates cooled by Peltier cells and disposed within the pellet material of a molecular sieve form of cold trap.

3,719,053

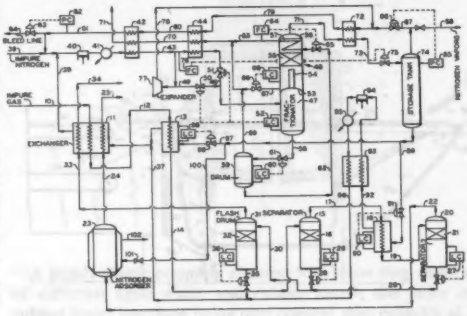
LIQUEFACTION AND PURIFICATION SYSTEM

Salvador S. De Marco, and Ernest A. Harper, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Oct. 23, 1969, Ser. No. 868,711

Int. Cl. F25j *3/00, 3/02, 3/08*

U.S. Cl. 62—38 **4 Claims**



Helium is purified utilizing liquid nitrogen as the refrigerant, the resulting nitrogen vapors being mixed with impure nitrogen, compressed, cooled and purified. In the purification of the nitrogen by fractionation, the liquid bottoms product is cooled and utilized to condense the overhead vapors in the column. The column is of novel design having a system of liquid level controllers and a flow controller to effect the desired nitrogen purification in an efficient manner.

3,719,054

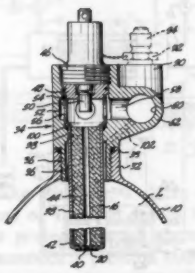
LIQUEFIED GAS VAPORIZER ATTACHMENT FOR A PRESSURE BOTTLE

Lyle D. Galbraith, Redmond, Wash., assignor to Rocket Research Corporation, Redmond, Wash.

Filed Aug. 24, 1970, Ser. No. 66,382

Int. Cl. F17c *7/02*

U.S. Cl. 62—50 **25 Claims**



The attachment is securable to the outlet of a storage bottle for liquefied CO_2 or other pressure liquefied gases. It houses a

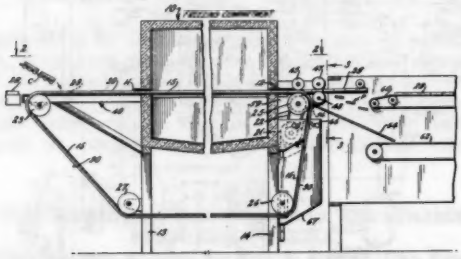
breech containing a solid fuel grain. Combustion gases flow from the breech through the storage bottle outlet into the liquefied gas. The added heat rapidly vaporizes the liquefied gas. The vapor pressure eventually opens a closure for an outlet passageway leading through the breech. This causes the combustion process to depressurize at a rate sufficient to cause extinguishment of the burning fuel grain and also provides a flow of coolant over the grain burning surface which ensures extinguishment.

3,719,055

CONTINUOUS BELT FREEZER HAVING REMOVABLE COMPARTMENTS

Gail C. Shapley, Seattle, Wash.; William J. Wakatsuki, Bridgeton, N.J., and William J. Scheffer, Waynesboro, Pa., assignors to Frick Company, Waynesboro, Pa.

Filed April 14, 1971, Ser. No. 133,976
Int. Cl. F25d *13/06*
U.S. Cl. 62—63 **5 Claims**



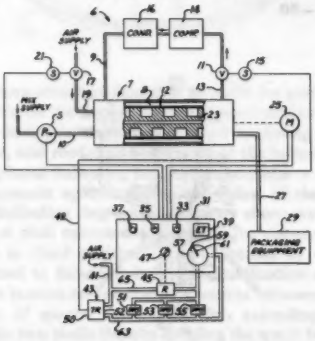
A continuous belt type freezer has a flat belt and one or more grid units of substantial length and breadth which are placed on the belt to form pockets for a product prior to being frozen, the individually frozen product units being separated from the belt and the grid as the belt moves downwardly and the grid continues forwardly from the discharge end of the freezer.

3,719,056

METHOD AND APPARATUS FOR CONTROLLING FREEZERS

Walter L. Hock, Skokie, Ill., and Abraham Simon, Havertown, Pa., assignors to Kraftco Corporation, New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,634
Int. Cl. F25c *7/10*
U.S. Cl. 62—70 **22 Claims**



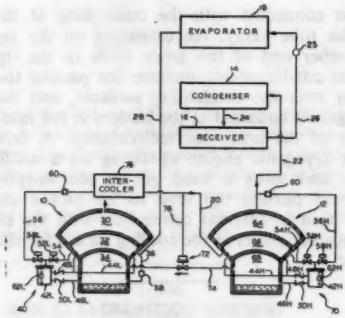
A method and apparatus are provided to permit quick stopping and subsequent restarting of freezers while preserving the immediate usability of the product being frozen. The stopping and the restarting of the freezers is related to the stiffness of the mix being frozen. In freezers having a plurality of freezing tubes, accommodation is made for the stopping and restarting according to the individual requirements of the mix in each separate tube.

3,719,057

TWO-STAGE REFRIGERATION SYSTEM HAVING CRANKCASE PRESSURE REGULATION IN HIGH STAGE COMPRESSOR

Whitney I. Grant, Muskego, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.

Filed Oct. 8, 1971, Ser. No. 187,800
Int. Cl. F25b *31/00*
U.S. Cl. 62—193 **9 Claims**



A two-stage refrigeration system including a condenser, a receiver, an evaporator, a low-stage dry-wall compressor and a high-stage dry-wall compressor, the low-stage compressor including an oil-draining assembly for automatically draining oil from the suction chamber to the crankcase chamber, and a pressure-equalizing connection between the suction chamber and the crankcase chamber, the high-stage compressor having an oil-draining assembly for automatically draining oil from the high-stage suction chamber to the high-stage crankcase chamber, and a pressure connection between the high-stage crankcase chamber and the low-stage crankcase chamber; and a pressure-responsive regulating valve interposed in the connection between the high-stage crankcase chamber and the low-stage crankcase chamber, the pressure-responsive valve being connected to respond to the high-stage suction chamber pressure to maintain a predetermined pressure differential of one pound per square inch between the high-stage suction chamber and the high-stage crankcase chamber.

3,719,058

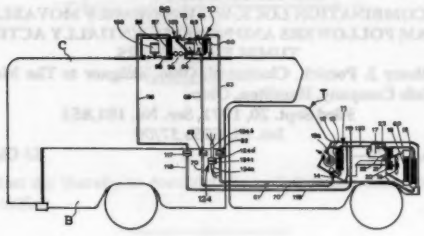
VEHICLE AIR CONDITIONING APPARATUS

James J. Waygood, Dallas, Tex., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed March 16, 1971, Ser. No. 124,860
Int. Cl. F25b *5/00*
U.S. Cl. 62—200 **11 Claims**

An air conditioning apparatus having an auxiliary air conditioning apparatus mountable on a structure connectible to a vehicle, such as a camper mountable on the vehicle or a trailer towable by the vehicle, or mountable on a larger vehicle such as a motor home or van having a primary and a secondary space which are preferably cooled by separate means. The auxiliary apparatus has an evaporator, means for circulating air from the interior of such structure or the secondary space of the large vehicle through the evaporator and back into the

interior or such secondary space, and a condenser through which air from the atmosphere is circulated to cool refrigerant fluid; and a primary air conditioning apparatus mountable on the vehicle which includes a compressor, a primary condenser and a primary evaporator, the two condensers being connected in a series to cool the refrigerant fluid compressed by the compressor and the evaporators being connected in parallel and so arranged that both will always be supplied with liquid refrigerant during operation of the apparatus. The apparatus also includes suitable control means for selectively operating the auxiliary and primary air conditioning apparatus for cooling the interior of the vehicle and such structure or the primary and secondary spaces of a large vehicle, which may be the space occupied by the driver of the large vehicle and a separate or connecting secondary space, and means for independently operating the primary air conditioning apparatus without the auxiliary apparatus being physically connected thereto.



3,719,059

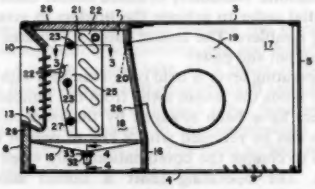
COOLING APPARATUS

Thomas C. Cavis, Onalaska, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Apr. 20, 1970, Ser. No. 30,151

Int. Cl. F25d *21/14*

U.S. Cl. 62—285 **6 Claims**



A fan coil air cooling unit having a generally rectangular housing with air inlet and outlet apertures is shown. The air cooling heat exchanger is supported intermediate the inlet and outlet apertures by but thermally insulated from the sidewalls of the housing to thereby reduce moisture condensation on the exterior sidewalls of the housing. The outlet aperture of the housing provided with a recessed grill also for purposes of mitigating condensate formation at the grill surfaces. The grill overhangs a drain pan to permit condensate which is formed at the grill surface to drain along with condensate from the cooling heat exchanger. A unique drain pan to condensate tube connection is provided.

3,719,060

HIGHLY ELASTIC ANNULAR COUPLER ELEMENT

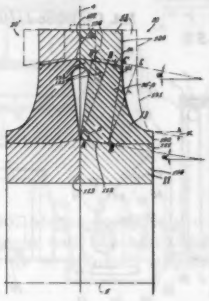
Dietrich Fessel; Heinz Hiersig; Fritz Kinzler, all of Dusseldorf; Werner Russmann, Leverkusen, and Helmut Schulz, Witten-Bommern, all of Germany, assignors to Lohmann & Stalterfoht Aktiengesellschaft, Witten am Ruhr, Germany

Filed March 11, 1971, Ser. No. 123,141

Claims priority, application Germany, March 11, 1970, P 20 12 627.6

Int. Cl. F16d *3/16*

U.S. Cl. 64—11 R **11 Claims**



A highly elastic coupling element with inner ring, outer ring of different axial width and rubber insert; the inner ring-rubber insert interface being part conical, part cylindrical, the other interface being essentially conical at similar cone angles. Upon axial displacement of the rings for compensating shrinkage tensile stress, the profile of the insert has rectangular contour, oblique as between the two conical interface portions and integral with a hyperbolically contoured portion of the insert for providing transition between the differently wide rings.

3,719,061

SAFETY DEVICE FOR FLAT KNITTING MACHINE

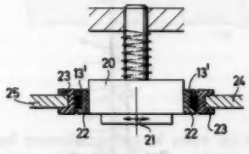
Wilhelm Hadam and Jurgen Ploppa, Reutlingen, Germany, assignors to H. Stoll and Company, Reutlingen, Germany

Filed Nov. 17, 1971, Ser. No. 199,533

Claims priority, application Germany, Nov. 17, 1970, P 20 56 391.1; Apr. 28, 1971, P 21 20 824.2

Int. Cl. D04b *35/10*

U.S. Cl. 66—157 **23 Claims**



In a flat knitting machine, a safety device for sensing large disturbances or reaction forces to cut off the machine and hence prevent damage thereto. The safety device includes piezoelectric pressure bodies strategically located to convert pressure forces into electrical signals. An electrical circuit senses the electrical signals and, if the signals are of sufficient magnitude, causes the machine to

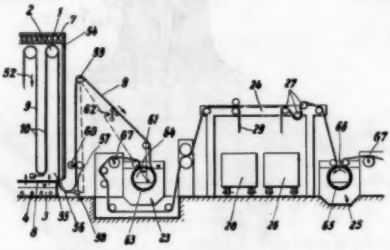
cut off. The electrical circuit may include a comparator to compare signals from the piezoelectric body or bodies or a semi-conductor which transmits a current to a relay to cut off the knitting machine drive only when it is triggered by a peak voltage from the piezoelectric body.

3,719,062

APPARATUS FOR THE CONTINUOUS TREATMENT OF ESPECIALLY THICK, VOLUMINOUS TEXTILE MATERIALS WITH LARGE WIDTHS

Heniz Fleissner, near Frankfurt am Main, Germany, assignor to Vepa AG, Basel, Switzerland

Filed May 28, 1970, Ser. No. 41,311
Claims priority, application Germany, Jan. 19, 1970, P 20 02 144.7
Int. Cl. D06c *1/10*
U.S. Cl. 68—5 E 11 Claims



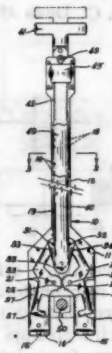
The present disclosure relates to a steamer apparatus for the dyestuff fixing of textile materials made of natural and synthetic fibers which comprises a heat-insulated treatment chamber containing a plurality of conveying rollers disposed in the upper portion thereof, and containing a drive means associated therewith, heating means disposed within said treatment chamber, inlet means for introducing the material to be treated to said treatment chamber and outlet roller means disposed at substantially the same level as said conveying roller but outside of the treatment chamber, said outlet roller means communicating with the drive means of the last conveying roller.

3,719,063

DEVICE FOR PREVENTION OF AUTOMOBILE THEFT

Manuel Fouces, and Juan M. Fouces, both of 2416 Mandell, Houston, Tex.

Filed July 1, 1971, Ser. No. 158,785
Int. Cl. G05g *5/00*
U.S. Cl. 70—202 5 Claims



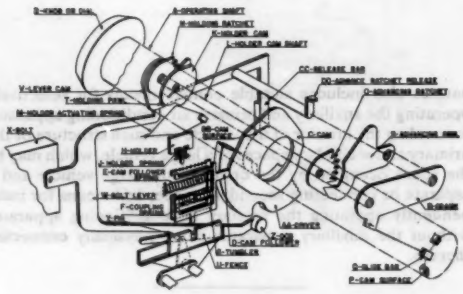
A device for preventing the theft of an automobile may comprise a support for attachment to an automobile and a jaw assembly mounted on the support for fastening the acceleration pedal assembly of an automobile in a non-depressed position. The jaw assembly may be attached to a rod member for opening and closing the jaws. The rod may be provided with teeth for engaging a locking device to hold the jaws in the closed or fastening position.

3,719,064

COMBINATION LOCK WITH LINEALLY MOVABLE CAM FOLLOWERS AND NONSEQUENTIALLY ACTING TUMBLER HOLDERS

Anthony J. Potzick, Cincinnati, Ohio, assignor to The Mosler Safe Company, Hamilton, Ohio

Filed Sept. 20, 1971, Ser. No. 181,853
Int. Cl. E05b *37/00*
U.S. Cl. 70—299 53 Claims



A combination lock having lineally movable cam followers that position corresponding tumblers. The tumblers are engageable with corresponding fences when arrested in proper positions. A spring resiliently couples each tumbler to a corresponding cam follower, and tends to cause them to move together lineally. Holders are actuated individually to prevent motion of the corresponding tumblers. The holders make edgewise engagement with the tumblers, and cam them into discrete positions. Randomly oriented holder cams operate in nonsequential order to actuate the holders to arrest the corresponding tumblers. The holder cams are rotated incrementally by a ratchet and pawl.

A bolt operating lever is held out of contact with the driver, and in turn holds the fences away from the tumblers, until all the tumblers have been engaged by the respective holders. The fences can be released with a key to permit them to be rearranged to change the combination, only when the bolt is withdrawn. The operating shaft is biased concentrically toward an axially centered position.

3,719,065

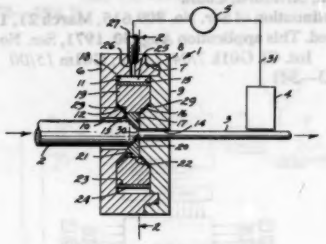
VARIABLE ORIFICE DIE AND CONTROL THEREFOR

Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed March 9, 1971, Ser. No. 122,319
Int. Cl. B21c *3/06*
U.S. Cl. 72—9 1 Claim

Fluid-pressure operable segments surrounding rod-deforming die are controlled by wire-diameter sensing device. As die

wear occurs, sensing device responds to increased wire diameter and raises fluid pressure to advance segments inwardly



against die thereby to constrict die and decrease diameter of die orifice.

3,719,066

PIERCING ROLLING APPARATUS FOR PRODUCING ROLLED MATERIAL FREE FROM SURFACE TORSION

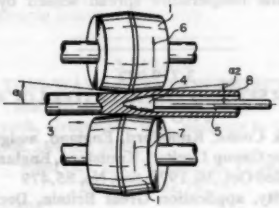
Toyohiko Okamoto, Osaka; Chihiro Hayashi, Takarazuka and Masaru Nishiguchi, Osaka, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Oct. 28, 1970, Ser. No. 84,663

Claims priority, application Japan, Nov. 5, 1969, 44/88937; Jan. 16, 1970, 45/4729

Int. Cl. B21b *19/04, 17/10*

U.S. Cl. 72—97 4 Claims



A piercing rolling apparatus utilizing the principle of the Stiefel Mannesmann type piercing mill and having two main rolls axes of which incline with each other vertically at the feed angle β with respect to the longitudinal axis of the material to be rolled and cross with each other horizontally at the cross angle γ with respect to the longitudinal axis of the material. A seamless steel pipe free from surface torsion is obtained by adjusting these angles β and γ.

3,719,067

STRAIGHTENING MACHINE

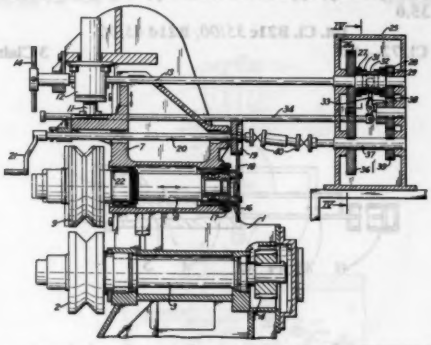
Odd J. Skawden, Bellefonte, Pa., assignor to Sutton Engineering Company, Pittsburgh, Pa.

Filed Dec. 13, 1971, Ser. No. 207,060

Int. Cl. B21d *3/02*

U.S. Cl. 72—164 7 Claims

A straightening machine has upper and lower rows of laterally spaced rolls with parallel horizontal axes. Extending away from one side of the rolls in one row are supporting shafts that are supported for rotation and axial adjustment. The other rolls are driven to carry an elongated metal workpiece along between the two rows of rolls, which are provided with peripheral grooves for the workpiece. Means are provided for adjusting the shaft-supported rolls vertically to deflect a workpiece in a vertical plane, and other means are provided for moving the same rolls axially in order to deflect the workpiece in a



horizontal plane also. Means operatively connecting the vertical adjusting means with the horizontal roll-moving means permit both to be adjusted simultaneously in a single operation.

3,719,068

METHOD OF MANUFACTURING AN ARTICLE HAVING A CYLINDRICAL PERIPHERAL WALL AND INTEGRAL THIN-WALLED PORTIONS INWARDLY THEREOF

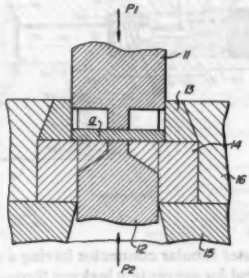
Seiya Hashimoto, Tokyo; Soji Takahashi, Kodaira; Yasuhiro Hattori, Tokyo, and Kuninori Imai, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed April 7, 1971, Ser. No. 131,893

Claims priority, application Japan, April 10, 1970, 45/30188

Int. Cl. B21c *23/20*

U.S. Cl. 72—254 4 Claims

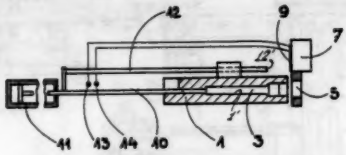


A method of manufacturing at once an article having a cylindrical peripheral wall and integral thin-walled portions inwardly thereof from a circular blank of a sheet material with a single stroke of pressing operation. In the first part of the stroke, the blank is subjected to a rearward extrusion to form the blank into a semi-finished article having the peripheral wall and the thin-walled portions with a thin bottom wall being left with the semi-finished article. In the remaining part of the stroke, the bottom wall is punched out of the semi-finished article to thereby provide a finished article.

3,719,069
APPARATUS FOR CONVEYING AN ELONGATED WORKPIECE

Rudolf Liebergeld, Gernotstrasse 51-55, 85 Nurnberg, Germany

Filed Aug. 14, 1970, Ser. No. 63,784
Claims priority, application Germany, Aug. 16, 1969, P 19 41 735.0
Int. Cl. B21c *35/00*; B21d *45/00*
U.S. Cl. 72—427 3 Claims

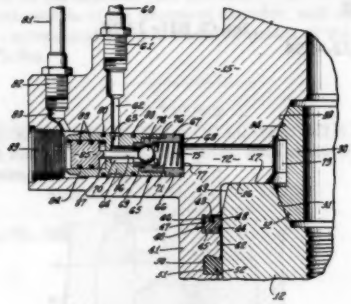


An apparatus for conveying an elongated workpiece into or out of a press has an ejector and conveying grippers, the grippers being movable lengthwise of the die as well as transversely thereof; the movement of the gripper during ejection movement of the workpiece is related to and dependent upon the motion of the ejector.

3,719,070
DOUBLE SEALED TUBULAR CONNECTOR APPARATUS

James W. E. Hanes, Ventura, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed March 9, 1971, Ser. No. 122,304
Int. Cl. G01m *3/04*
U.S. Cl. 73—37 10 Claims

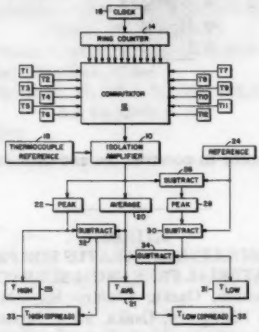


An underwater tubular connector having a primary seal and a secondary seal for preventing leakage through the connector between its interior and exterior. Both seals are effected automatically in response to bringing companion connector members into coupled relation, any trapped fluid between the seals being permitted to escape through a hydraulic monitoring line extending to a vessel floating at the water surface, the monitoring line also being usable for applying fluid pressure to the region between the seals to test them for leakage. A valve controlled from the vessel determines the flow of fluid through the monitoring line, selectively permitting or preventing flow of fluid from the region between the seals through the monitoring line to control and sensing devices on the vessel, to enable such region to be continuously or selectively monitored and fluid to escape therefrom to prevent its being trapped.

3,719,071
MEASUREMENT OF GAS TEMPERATURE VARIATIONS IN A GAS TURBINE ENGINE

Rudolph Hohenberg, Trumbull, Conn., assignor to Avco Corporation, Stratford, Conn.

Continuation of Ser. No. 809,615, March 21, 1969, abandoned. This application Aug. 30, 1971, Ser. No. 176,286
Int. Cl. G01k *7/04*, *13/02*; G01m *15/00*
U.S. Cl. 73—341 6 Claims

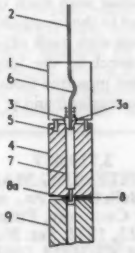


A plurality of thermocouples is positioned in the exhaust gas stream of a gas turbine engine. The voltage generated by each thermocouple is sensed and the average temperature and the highest and lowest temperatures are derived. In addition, the differences between the average temperature and the highest and lowest temperatures, respectively, are used to provide an indication of the temperature spread sensed by the thermocouples.

3,719,072
DEVICES FOR SENSING THE RELATIVE LOCATION OF TWO BODIES

Brian Frederick Cooke, Knutsford, England, assignor to The Nuclear Power Group Limited, Knutsford, England

Filed Oct. 30, 1970, Ser. No. 85,479
Claims priority, application Great Britain, Dec. 9, 1969, 59,945/69
Int. Cl. G01b *13/00*
U.S. Cl. 73—37.5 4 Claims

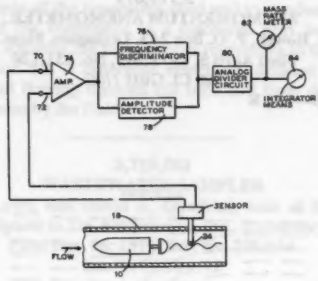


A device for sensing the relative location of two bodies has means for supplying a flow of fluid to a passage in at least one of the bodies whereby when the two bodies are located correctly with respect to one another, the flow of fluid is interrupted and means are provided for sensing the interruption of fluid flow.

3,719,073
MASS FLOW METER

Roger F. Mahon, New Brunswick, N.J., assignor to American Standard Inc., New York, N.Y.

Filed Sept. 14, 1970, Ser. No. 71,951
Int. Cl. G01f 1/00
U.S. Cl. 73—194 B 1 Claim

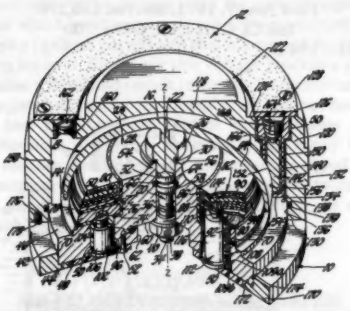


The invention relates to mass flow measurements. A cylindrical body having a curved nose at one end and a flat base at the other end is connected to a disc of smaller diameter, with the disc being centered coincident with the longitudinal axis of the body and being spaced axially from the base thereof. This assembly, when aligned axially at midstream of a flowing fluid with the nose pointed upstream, generates a downstream wake in which the fluid traces an oscillatory flow pattern. The mass flow of the fluid is determined from the frequency and amplitude of the oscillations. The frequency varies directly with the velocity of the fluid flow whereas the amplitude varies with the product of the fluid density and the square of the flow velocity. The device produces desirable low pressure losses and has a simple internal geometry.

3,719,074
ROTATING-WAVE ROTATION DETECTOR AND METHOD OF OPERATING SAME

David D. Lynch, Greendale, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 1, 1970, Ser. No. 77,067
Int. Cl. G01c 19/56
U.S. Cl. 73—505 8 Claims

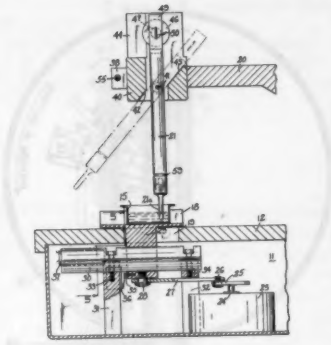


A bell-like high-Q member having sides capable of being flexed in a radial vibration pattern defining an anti-nodal region that is free to rotate about the sides in proportion to the rotation of the sides about an input axis. A forcer is mounted adjacent and encircling the periphery of the sides and is effective at the instantaneous angular position of the anti-nodal region to parametrically excite and exercise the sides. Sensor means are located adjacent the periphery and along radii fixed with respect to the bell sides to measure the pattern rotation with respect to bell rotation.

3,719,075
VISCOSITY MEASURING DEVICE

Nicholas Mandrona, Stratford, and Warren R. Jewett, Orange, both of Conn., assignors to Medical Sciences International, Inc., Milford, Conn.

Filed Oct. 19, 1970, Ser. No. 81,844
Int. Cl. G01n 11/10
U.S. Cl. 73—54 12 Claims

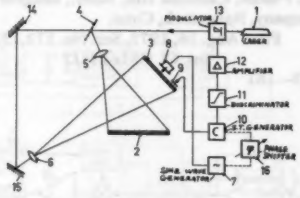


This disclosure relates to apparatus for measuring the viscosity and change in viscosity of fluids, such as blood. A member carrying a container of a fluid sample is reciprocated while a pendulum extends therein. When the viscosity of the fluid changes sufficiently, motion is imparted to the pendulum and predetermined motion thereof is detected to indicate a given viscosity of the fluid.

3,719,076
APPARATUS FOR THE HOLOGRAPHIC ANALYSIS OF OSCILLATING OBJECTS

Francois Mottier, Zurich, Switzerland, assignor to Brown Boveri & Company Limited, Baden, Switzerland

Filed June 23, 1971, Ser. No. 158,652
Claims priority, application Switzerland, July 1, 1970, 10038/70
Int. Cl. G01h 9/00; G02b 27/00
U.S. Cl. 73—71.3 1 Claim

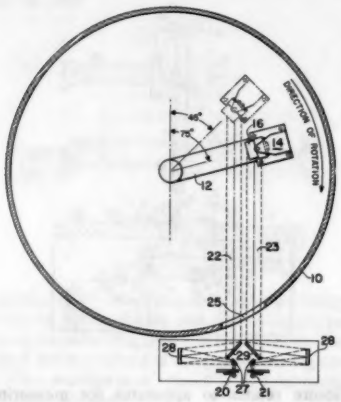


A method and apparatus for holographic analysis of oscillating objects, in which the recording laser beam, either before or after being split into reference and object beams, is amplitude modulated according to the function:

$$\sum_{k=0}^{n} \cos\left[kz_0 \sin\left(\omega t+\varphi\right)\right]$$

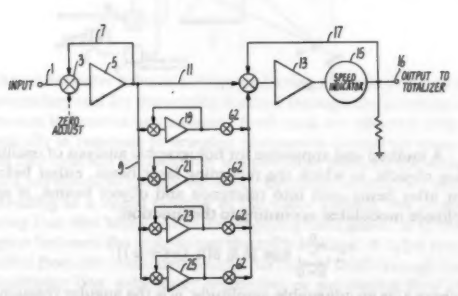
where z_0 is an adjustable amplitude, ω is the angular frequency of oscillation of an object, ϕ is a phase constant, and n is the ordinal number of the greatest amplitude of the oscillating object to be detected.

3,719,077
APPARATUS FOR TESTING INFRARED SENSITIVE FUZES
David C. Haupt, Riverside, and Walter F. Smith, Alta Loma, Calif., assignors to the United States of America as represented by the Secretary of the Navy
Filed Dec. 6, 1960, Ser. No. 75,071
Int. Cl. G01l *5/14*
U.S. Cl. 73—167 **6 Claims**



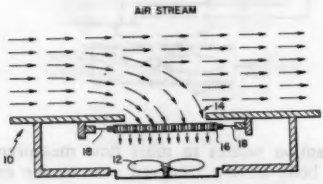
1. Apparatus for testing influence fuzes of the infrared sensitive type that have optical detecting channels and arming and detonation means for detonating the fuze when the optical detecting channels properly receive infrared radiation of selected bandwidths; said test apparatus comprising centrifuge means for exerting acceleration forces on such a fuze sufficient to cause the fuze arming means to arm, target simulating means for subjecting certain of the fuze detecting channels to a number of gradually increasing steps of infrared radiation within specified values of intensity and bandwidth as required for fuze operation, wherein when the fuze detecting channels detect the proper infrared radiation the fuze can detonate, and means for recording when said fuze detonates in relation to the values of intensity of infrared radiation.

3,719,078
LINEAR OUTPUT BOAT SPEEDOMETER
Harvey L. Pastan, Chestnut Hill, Mass., assignor to The Eastern Company, Naugatuck, Conn.
Filed Aug. 16, 1971, Ser. No. 172,131
Int. Cl. G01c *21/12*
U.S. Cl. 73—181 **2 Claims**



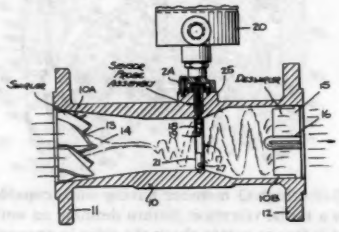
A boat speedometer including an electronic circuit combined with a force velocity measuring transducer which has a non-linear output to convert the output to a voltage which is directly proportional to speed. In the described embodiment, the transducer output signal is approximately 5 volts at zero speed and varies as the 1.9th power of speed up to a maximum signal level of 7.5 to 8 volts and this is converted to a voltage directly proportional to speed.

3,719,079
AIR MOMENTUM ANEMOMETER
Wallace E. Howell, P. O. Box 243, Lexington, Mass.
Filed April 5, 1971, Ser. No. 131,120
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 R **13 Claims**



A device for the measurement of horizontal wind velocity, especially low wind velocity. The horizontal component of momentum of the airstream is displaced from its normal flow. This is accomplished by either injecting an air jet into the airstream to displace the horizontal component of momentum, or withdrawing from the airstream the horizontal component of momentum by passing the airstream over an inlet into which inlet is drawn the horizontal component of the momentum flux of the airstream. The momentum of the air is converted to a force which is thus sensed and measured by a transducer, and since the force transduced is proportional to the first power of wind speed, large forces which may be accurately measured at low wind speeds are achieved.

3,719,080
SENSOR PROBE AND SHIELD ASSEMBLY FOR SWIRL-TYPE FLOWMETER
Thomas H. Burgess, Horsham, Pa., assignor to Fischer & Porter Co., Warminster, Pa.
Filed June 7, 1971, Ser. No. 150,278
Int. Cl. G01f *1/00*; **G01p** *5/00*
U.S. Cl. 73—194 B **7 Claims**



A swirl-type flowmeter whose output frequency is a function of fluid-flow rate. The inlet section of the meter flow tube is provided with a set of fixed swirl blades which impart a swirling motion to incoming fluid, the swirling fluid being caused to precess in an enlarged section of the tube. The

precessional motion is detected by a thermistor probe and shield assembly to produce voltage pulses whose frequency depends on flow rate. This assembly is constituted by a probe extending transversely into the tube and supporting a bead-type thermistor at a point adjacent to the inner wall of the tube. Surrounding the probe and the thermistor is the upper end portion of an elongated tubular shield whose lower end portion has an access port therein which is oriented to capture a small sample of the precessing fluid and to conduct it in the direction of the thermistor to a discharge port beyond the thermistor, whereby the thermistor is responsive to the precessional motion but is otherwise effectively isolated from the mass of fluid flowing through the tube and from destructive particles borne by the fluid.

3,719,081

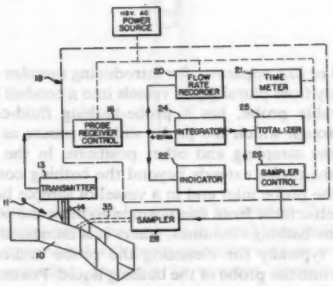
WASTEWATER SAMPLER

Lewis G. Lynn, and David A. Quadrini, both of Rochester, N.Y., assignors to Tri-Aid Sciences, Inc., Rochester, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,644

Int. Cl. G01h *1/12*

U.S. Cl. 73—198 **15 Claims**



Effluent is discharged into a flume to flow past a selectively operable sampler device, and an adjacent probe, which develops and transmits to a remote control point a 4 to 20 milliamp signal the amplitude of which is proportionate to the effluent flow rate. At the control point the signal is applied to an integrator which produces an output voltage proportionate to the quantity (gallons) of effluent that has passed the probe in a preceding interval. Each time this voltage reaches a predetermined value a threshold circuit resets the integrator and pulses a first register to record the quantity of effluent for a given period, and simultaneously pulses a presettable counter, which produces a sampler enabling signal every time the counter reaches zero and resets. This enabling signal momentarily energizes a solenoid in a remote sampler to cause it to pump a sample of wastewater from the flume to a sample receptacle.

3,719,082

AIR VELOCITY MEASURING SYSTEM

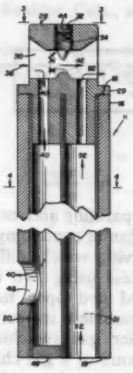
Alfred A. Obermaier, Barrington, and Martin J. Pierman, Mount Prospect, both of Ill., assignors to Alnor Instrument Company, Div. of Illinois Testing Laboratories, Inc., Chicago, Ill.

Continuation of Ser. No. 687,084, Nov. 13, 1967. This application March 29, 1971, Ser. No. 129,103

Int. Cl. G01f *5/00*

U.S. Cl. 73—202 **24 Claims**

An air velocity measuring system having a probe adapted to be placed into a flow of air and coupled to a measuring apparatus. The probe is specially constructed and precalibrated to track a pitot standard under varying static pressure conditions. The measuring apparatus may be a flow meter having a moving vane which is responsive to the air passing through the probe. In the preferred embodiment of the invention a range adjusting switch is coupled between the probe and the measuring apparatus and enables the system to have a plurality of



ranges by placing a resistance, in the form of one of a plurality of needle valves, into the path of the air flow to the measuring apparatus. In the preferred embodiment, the probe, the range adjusting switch and the measuring apparatus are calibrated to form a system. Once calibrated, the individual elements of the system are interchangeable with the corresponding elements of other of similarly calibrated mass produced systems, without requiring subsequent recalibration of each system.

3,719,083

FLOWMETERS

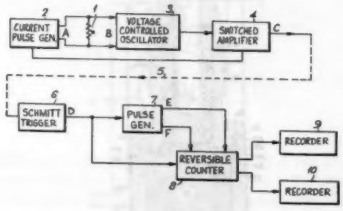
William Meldrum Morris, Edinburgh, Scotland, and Norman Matheson Lindsay, Edgware, England, assignors to National Research Development Corporation, London, England

Filed March 29, 1971, Ser. No. 128,713

Claims priority, application Great Britain, April 1, 1970, 15,546/70

Int. Cl. G01f *1/00*; G01p *5/10*

U.S. Cl. 73—204 **4 Claims**



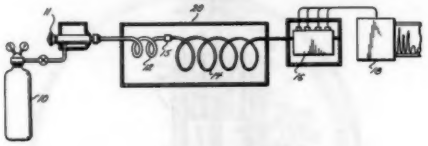
A flowmeter comprises an electrically resistive sensing element which is heated electrically while exposed to a stream of fluid. The heating power is supplied in the form of a train of identical pulses spaced so that thermal equilibrium between the sensing element and the fluid is achieved before each pulse. Variations in the fluid flow rate are detected by sensing variations in the rate of change of resistance of the sensing element during a pulse.

3,719,084

MEANS FOR SEPARATING ORGANICS CONTAINING FROM ONE TO TWENTY CARBONS COMPRISING SERIES CONNECTED PACKED AND CAPILLARY COLUMNS

John Q. Walker, Edwardsville, Ill., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Sept. 21, 1970, Ser. No. 73,755
Int. Cl. G01n *31/08*; B01d *15/08*
U.S. Cl. 73—23.1 14 Claims



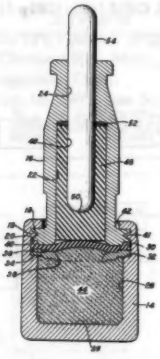
An apparatus for separating and/or identifying complex mixtures including organics containing from one to twenty carbon atoms and having widely differing boiling points in a continuous process using two different series connected tandem packed and open tubular columns and without the use of subambient temperature programming, backflushing or carrier gas switching techniques. The apparatus is in the nature of a gas chromatograph having substantially expanded operating and detection ranges as compared to existing devices used for the same or similar purposes and as such the present device has broad uses as a research and as a routine analysis tool and can be used to separate and identify the presence of constituents in gaseous, liquid and solid states. Furthermore, while the main use of the present device is in connection with organic substance analysis it can also be used to separate and/or detect the presence of certain inorganic substances as well.

3,719,085

THERMAL POWER ELEMENT

Boyd P. Sliger, Concord, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 23, 1970, Ser. No. 91,647
Int. Cl. G01k *5/34*
U.S. Cl. 73—368.3 4 Claims



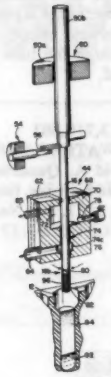
A thermal power element is constructed of a pair of generally hollow casing members with a thermally responsive charge in one casing member and with a sealed plunger protruding from the other casing member. The two casing members are joined together to form a unitary structure by means of interengaging flange elements securely locked together to prevent relative movement between the casing members.

3,719,086

LIQUIDS SAMPLER WITH PROBE-BATHING CHAMBER

John D. Bannister; Joseph C. Peters, and Michael Jordan, all of Needham Heights, Mass., assignors to Damon Corporation, Needham Heights, Mass.

Filed Jan. 12, 1971, Ser. No. 105,803
Int. Cl. G01n *1/14*
U.S. Cl. 73—423 A 16 Claims



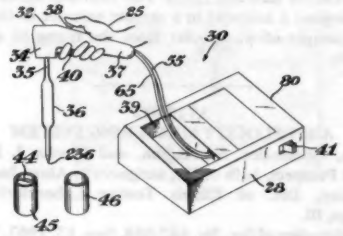
Clinical or like apparatus for introducing samples of liquids successively from plural liquid vessels into a conduit by means of a movable probe, has a probe-bathing fluid-containing system through which the probe slidably passes as it moves between the sampling and other positions. In the sampling position, the probe extends beyond the bathing container to immerse the probe inlet end in a vessel of sample liquid. The probe is retractable from this position to draw the probe inlet end into the bathing container, where it is immersed in a bath of liquid, typically for cleansing the probe and/or for the aspiration into the probe of the bathing liquid. Pneumatic sealing in the bathing container allows the probe to slide freely relative to it without leakage of the bathing liquid out of the container, and gas scavening of the probe as it again passes out of the bathing container removes the bathing liquid from it, for preventing contamination of the sample liquids.

3,719,087

PIPETTING APPARATUS AND METHOD

Ralph E. Thiers, 2033 Lander Drive, Woodland Hills, Calif.

Continuation-in-part of Ser. No. 860,775, Sept. 24, 1969, Pat. No. 3,607,082, Continuation-in-part of Ser. No. 541,306, April 8, 1966, Pat. No. 3,475,128. This application July 23, 1970, Ser. No. 57,720
Int. Cl. B01l *3/02*
U.S. Cl. 73—425.6 29 Claims



An automatic pipetting apparatus comprises a hand-holdable pipet-operating apparatus which includes means for releasably coupling a plurality of interchangeable pipets to a

low-dead-space valving structure. The valving structure operates the pipets by selectively sealing or applying suction or pressure to a pipet. A pipet driving subassembly including pressure and suction pumps is coupled to the pipetting apparatus by flexible tubes, permitting continuous application of suction and pressure to the pipet-operating apparatus as well as free movement of the pipet-operating apparatus with respect to the pipet driving subassembly.

3,719,088

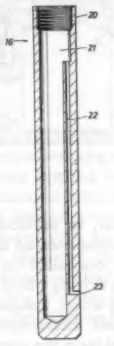
WELL SURVEY INSTRUMENT HOUSING

Euan Noble, Calgary, Alberta, Canada, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,405

Int. Cl. E21b *47/00*; G01d *11/24*

U.S. Cl. 73—431 **4 Claims**



A pressure instrument housing to be used in obtaining improved pressure survey recordings in a well bore having corrosive fluids is provided with pressure entry passages and narrow upwardly-extending channels to prevent displacement by gravity separation of corrosion inhibitor fluids contained in the carrier body.

3,719,089

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

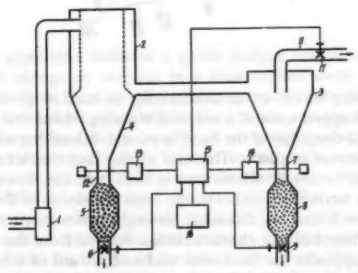
Denis Fletcher Kelsall, Beaumaris, and Clifford John Restarick, Caulfield, Victoria, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, East Melbourne, Victoria, Australia

Filed Aug. 11, 1970, Ser. No. 62,990

Claims priority, application Australia, Aug. 14, 1969, 59519/69

Int. Cl. G01n *15/02*

U.S. Cl. 73—432 PS **6 Claims**



In a method for determining the particle size distribution in a fluid stream wherein the concentration of one size fraction is compared with that of another, the concentration of a given fraction is determined by determining the rate of accumulation of the material of that fraction over a series of successive short time intervals.

3,719,090

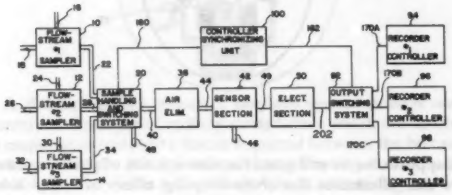
METHOD AND APPARATUS FOR MEASUREMENT OF PARTICLE SIZE AND PERCENT SOLIDS IN MULTIPLE PROCESS FLOWSTREAMS

Robert E. Hathaway, Boulder, Colo., assignor to Autometrics Co., Boulder, Colo.

Filed March 8, 1971, Ser. No. 121,879

Int. Cl. G01n *15/02*

U.S. Cl. 73—432 PS **13 Claims**



Method and apparatus for measurement of particle size and percent solids in multiple process flowstreams. A plurality of process flowstreams are presented to one sensing system adapted to measure particle size and percent solids in a liquid-solids slurry in a manner to permit generation of electrical output data representative thereof in a sequence and identifiable with the process flowstreams being measured. The electrical output data is sequentially applied to electrical controls associated with a flowstream to regulate particle size and percent solids therein.

3,719,091

PRESS WITH OVERHEAD DRIVE

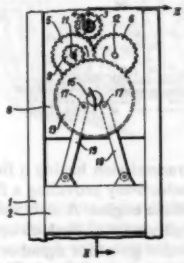
Max Drummer, Heiningen; Micheal Wolfgang, Goppingen; Werner Munch, Goppingen, and Rupert Riegert, Goppingen, all of Germany, assignors to L. Schuler GmbH, Goppingen, Germany

Filed March 4, 1970, Ser. No. 16,535

Claims priority, application Germany, March 4, 1969, P 19 10 850.0

Int. Cl. F16h *21/22*

U.S. Cl. 74—44 **13 Claims**



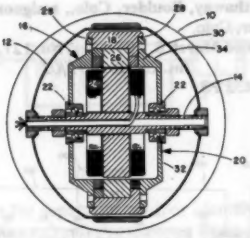
In a press, particularly a transfer press, having a multi-point drive to the ram from pairs of crank wheels, the crank wheels in each pair are arranged coaxially in oppositely rotating pairs and are connected to spaced points on the ram by mirror image linkages which may be a simple connecting rods or compound linkages. In a transfer press, each tool may be mounted on a separate ram provided with such a drive.

3,719,092

END PLATE FOR GYROSCOPE ROTOR

Charles E. Quinby, Grand Rapids, Mich., assignor to Lear Siegler, Inc., Grand Rapids, Mich.

Filed April 7, 1970, Ser. No. 26,209
Int. Cl. G01c *19/00*
U.S. Cl. 74—5 7 Claims



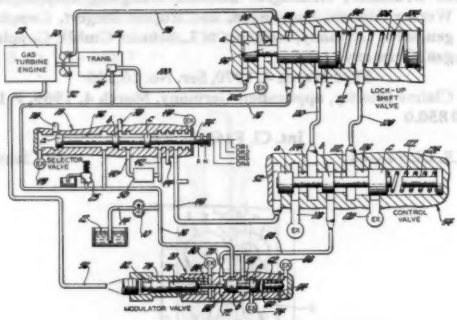
Support disc or end plate for massive rim of gyroscope rotors that eliminates the cross-coupling effect of radial load causing axial deflection and the resulting change in anti-friction bearing loading. The end plate includes a marginal edge portion having cut-outs defining flexural elements which yield in plane of marginal edge portion rather than in plane perpendicular thereto.

3,719,093

LOCK UP CLUTCH CONTROL

John O. Edmunds, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 5, 1971, Ser. No. 169,377
Int. Cl. F16h *47/08*; B60k *21/02*
U.S. Cl. 74—645 3 Claims



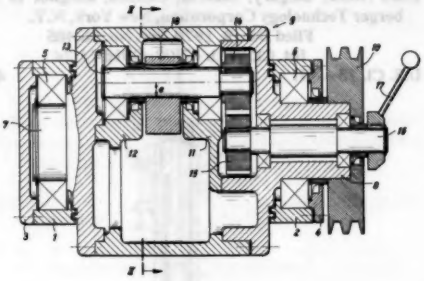
A control for a transmission having a fluid coupling and a lock up clutch for selectively providing a fluid or mechanical input from a gas turbine engine. A shift valve controls the engagement and disengagement of the lock up clutch in response to a transmission output governor signal or a manual signal in cooperation with the governor signal. The manual signal is controlled by a control valve which also supplies a disengagement bias pressure to the shift valve when the manual signal is not directed to the shift valve. The manual signal is generated in response to an engine operating parameter, such as torque demand, and acts on the shift valve in such a manner as to prevent engagement of the lock up clutch at zero vehicle speed above a predetermined value of the operating parameter.

3,719,094

VIBRATION GENERATOR

Eberhard Borsutzki, P.O. Box 466, Harburger Strasse 122, D 2130-Rotenburg (Wumme), and Gerhard Liehmann, Quellenweg 12, D445 Laxten-Lingen, both of Germany

Continuation of Ser. No. 858,082, Sept. 15, 1968, abandoned.
This application Aug. 31, 1971, Ser. No. 176,754
Claims priority, application Germany, Sept. 13, 1968, P 17 58 966.7
Int. Cl. B06b *1/16*
U.S. Cl. 74—87 9 Claims



A vibration generator, in particular for soil compacting machines or the like, comprises an unbalance mass which is rotatably eccentrically journalled on a crank mounted on a drive shaft and having a driving wheel in operative connection with a stationary mating wheel, concentric with the drive shaft and rotatable thereabout, characterized in that the driving wheel and mating wheel have the same dimensions so that, in operation, the driving wheel of the unbalance mass rolls on the stationary mating wheel and causes the distance between the center of gravity of the unbalance mass and the drive shaft to traverse a maximum and minimum off-set by 180° or 0° for each rotation.

3,719,095

STEERING-WHEEL COVER

Karl Meier, Wolfsburg, Germany, assignor to Kamei, Auto-Komfort Wolfsburg K. Meier KG, Wolfsburg, Germany

Filed Dec. 20, 1971, Ser. No. 210,036
Claims priority, application Germany, Dec. 19, 1970, G 46 993.1
Int. Cl. B62d *1/06*
U.S. Cl. 74—558 7 Claims

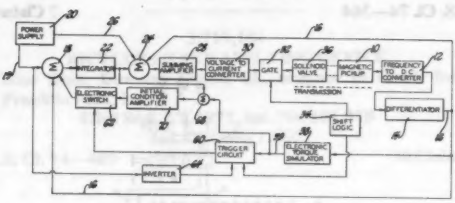
A steering-wheel cover comprising an endless perforated band is wrapped around a toroidal steering wheel and a lace attached to one edge of the band is wound around the wheel to hold the cover in place. The end of the lace carries a rigid metal strip or needle whose end is bent over the lace end so that it lies normally parallel to the lace. By means of this strip the lace end can be threaded through perforations on the cover for best holding characteristics. Spaced from the end of the strip opposite the bent-over end and inward of a longitudinal edge of the strip there is a cutting edge by means of which the free end of the lace is cut off. Advantageously the bent-over end of the metal strip is provided for best securing of the lace end.

3,719,096

ELECTRONIC SHIFT CONTROL FOR A TRANSMISSION

Richard L. Sprague, and David S. Dennis, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1971, Ser. No. 193,041
Int. Cl. F16h *3/74*; B60k *21/00*
U.S. Cl. 74—752 D 4 Claims



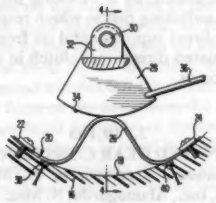
A transmission having a clutch controlled multi-ratio gear train driven through a torque converter includes an electronic control regulating pressure applied to an oncoming clutch during ratio change. The control primarily regulates the clutch pressure according to a desired acceleration of a rotatable member of the transmission such as a sun gear which accelerates during a shift. However, due to a low responsive characteristic of the torque converter, the initial part of the shift is controlled according to a simulated transmission output torque electronically derived from sun gear acceleration.

3,719,097

MECHANICAL APPARATUS

Donald F. Wilkes, Albuquerque, N. Mex., assignor to Rolamite, Incorporated, San Francisco, Calif.

Filed April 29, 1970, Ser. No. 32,886
Int. Cl. F16h *21/44*
U.S. Cl. 74—100 21 Claims



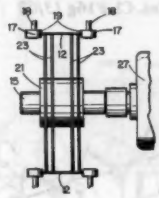
The apparatus includes a guide surface which supports a flexible elongated element in a lobe arched away from the guide surface. Portions of the element on opposite sides of the lobe frictionally engage the surface to prevent the lobe from collapsing. The lobe is capable of progressing along the element to displace the lobe relative to the guide surface. The flexible elongated element is in the form of a thin flexible band. The guide surface may be either flat or concave. Preferably, the band is secured to the guide surface at positions spaced apart from each other a distance substantially greater than the length of the lobe in the band. The lobe may be caused to progress along the guide surface by lifting the band away from the guide surface at either end of the lobe, or by applying a force to the apex of the band in a direction extending longitudinally of the band.

3,719,098

PULLEY BELT ASSEMBLY

Howard K. Graves, Cleveland, Ohio, assignor to Olin Corporation, New Haven, Conn.

Filed March 22, 1971, Ser. No. 126,535
Int. Cl. F16h *55/36*; F16g *1/00*; F16h *7/18*
U.S. Cl. 74—216.5 15 Claims



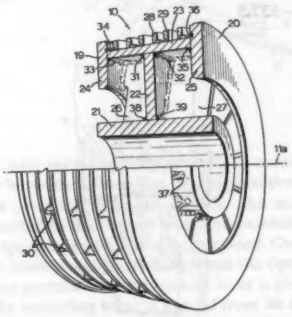
A flat belt pulley transport employs spaced pulleys each constructed as a set of radially slotted discs which are flexible in response to transverse forces imparted between the belt and pulley. The belt is retained on the pulleys by spaced nonrubbing guides which deflect the belt back to tracking position whenever a transverse movement of the belt occurs. The flexible ribs of the discs minimize both lateral forces tending to detrack the belt and corresponding resistance to restoring forces from the guides. Where a sprocket drive is used the sectors between slots are also flexible in the direction of belt motion to compensate for sprocket and hole misalignment.

3,719,099

DRIVE WHEEL FOR FRICTION MINE HOIST

Peter de Hertel Eastcott, and James Ernest Welch, both of Peterborough, Ontario, Canada, assignors to Canadian General Electric Company Limited, Toronto, Ontario, Canada

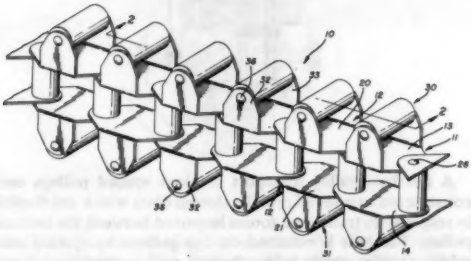
Filed Jan. 29, 1971, Ser. No. 110,989
Int. Cl. F16h *55/40*
U.S. Cl. 74—230.3 1 Claim



A drive wheel for a friction mine hoist. The wheel has a shaft adapted for rotation in bearing on a horizontal axis, a hub on the shaft coaxial with respect thereto, a flat ring secured to the periphery of the hub concentric with the hub with its flat faces at right angles to the axis of rotation, a cylindrical rim encircling the ring coaxial with the axis of rotation, an annular flange on each end of the rim having an inner portion projecting radially inward in spaced relation to the hub and shaft, a plurality of flat ribs located in angularly spaced relation between the hub, ring, rim and flanges with their flat sides directed radially and axially, and tread retaining structure on the periphery of the rim. The ring, rim, flanges and

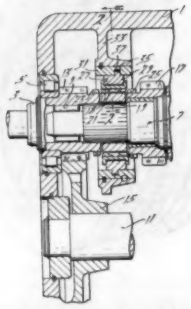
spokes are rigid members welded together and the welded structure is secured to the hub in a way which results in a very stiff wheel structure.

3,719,100
ROLLER CHAIN
Dick T. Myers, Austin Drive R.F.D. No. 2, Willard, Ohio
Filed March 8, 1971, Ser. No. 121,873
Int. Cl. F16g *13/02*
U.S. Cl. 74—246 **11 Claims**



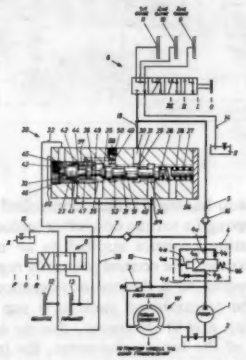
A roller chain comprising a plurality of link members. The link members have spaced plates, and first rollers are mounted to extend between the plates. Second roller means are mounted on flanges extending from the plates, and the axes of the first and second rollers are nonparallel.

3,719,101
CLUTCH ACTUATOR FOR A GEARED POWER TRANSMISSION MECHANISM
Eric John Banks, Thorpe Bay, England, assignor to Ford Motor Company, Dearborn, Mich.
Filed Aug. 30, 1971, Ser. No. 176,085
Claims priority, application Great Britain, Oct. 7, 1970, 47,636/70
Int. Cl. F16h *5/08*
U.S. Cl. 74—337.5 **2 Claims**



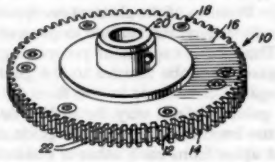
A transmission clutch adapted to connect selectively a rotary gear member of a transmission mechanism to either a torque delivery shaft or a companion gear member during ratio changes comprising an actuator having an externally splined clutch element within an internally splined clutch sleeve, the former being connected to one torque delivery member, adjacent clutch elements carried by two other torque delivery members, a cam sleeve surrounding the internally splined clutch sleeve and pressure operated servo means for angularly adjusting the cam sleeve to effect axial shifting movement of the internally splined sleeve into and out of clutching engagement.

3,719,102
CONTROL SYSTEM FOR HYDRAULIC CLUTCHES OF REVERSIBLE GEAR-SHIFT MECHANISM
Fritz Leber; Karl-Gottfried Seumel, both of Friedrichshafen, and Gunther Mohrle, Ailingen-Berg, all of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany
Claims priority, application Germany, Feb. 27, 1971, P 21 09 371.0
Filed Feb. 28, 1972, Ser. No. 229,862
Int. Cl. B60k *21/00*
U.S. Cl. 74—364 **7 Claims**



A hydraulic gear-shift mechanism for an automotive vehicle includes several gear clutches for the establishment of different speed ratios and a pair of directional clutches for choosing between forward and reverse drive. Both sets of clutches are actuatable by way of a pressure-responsive throttle valve, via respective selectors, yet in the neutral position of the directional selector a bypass is opened for the direct actuation of a selected gear clutch at high pressure. The closing of the bypass is controlled, in response to the back pressure from either directional clutch, by a blocking piston in a cylinder also containing a switching piston which responds to the same back pressure to direct supplemental oil from a branch of the bypass to the actuated directional clutch in order to compensate for leakage losses.

3,719,103
LAMINATED GEAR CONSTRUCTION
George W. Streander, Alamogordo, N. Mex., assignor to Design Systems, Inc., Alamogordo, N. Mex.
Filed Oct. 7, 1971, Ser. No. 187,438
Int. Cl. F16h *55/12, 55/18*
U.S. Cl. 74—445 **7 Claims**



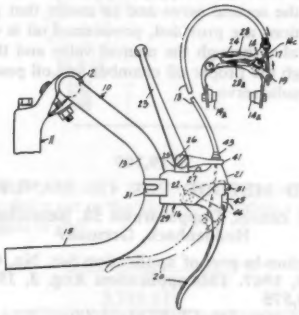
A gear body including an edge portion of predetermined configuration and of laminated construction including a

center ply of plastic material and a pair of opposite side plies constructed of more rigid material. The aforementioned edge portion of the gear body has gear teeth formed therein with each of the gear teeth composed of aligned gear teeth segments formed in the three plies of the edge portion and with the gear tooth segments formed in the center plastic ply of the gear body including tooth segments defining surfaces projecting at least slightly outwardly beyond the corresponding tooth segment defining surfaces comprising the gear teeth formed in the opposite side plies of the gear body.

3,719,104
BICYCLE BRAKE APPLYING DEVICE

Walter Dian, Downers Grove, Ill., assignor to Excel, Inc., Franklin Park, Ill.

Filed Sept. 17, 1971, Ser. No. 181,378
Int. Cl. G05g *11/00*
U.S. Cl. 74—489 **10 Claims**



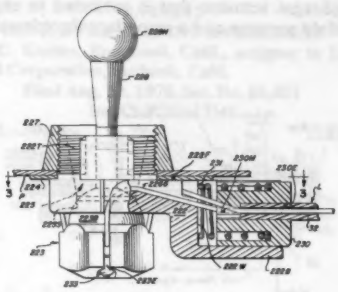
Bicycle brake actuator for drop type handle bars, such as are employed on lightweight touring types of bicycles. The brake actuator includes a main hand brake lever operable when the hands are on the hand grips of the handle bars, and an auxiliary brake lever movable relative to the main brake lever and operable by the hands when on the cross bar of the handle bar. In one form of the invention, either hand brake lever may be operated without affecting operation of the other lever. In another form of the invention, the main hand brake lever and auxiliary hand brake lever operate together when applying the brakes by the main hand brake lever and application of the brakes by the auxiliary hand brake lever has no affect on movement of the main hand brake lever.

3,719,105
REMOTE SWIVEL MOVEMENT CONTROL

Laurence G. Horwitt, New Haven, and Donald J. Mattis, Norwalk, both of Conn., assignors to Nelmor Incorporated, Warren, Mich.

Continuation-in-part of Ser. No. 1,177, Jan. 7, 1970, Pat. No. 3,618,420. This application Oct. 7, 1971, Ser. No. 187,303
Int. Cl. F16c *1/14*
U.S. Cl. 74—501 M **4 Claims**

A remote actuator control for producing swivel movement for transmission through flexible cables utilizes a stationary socket-type member and a movable ball member in an arrangement wherein the cable ends are guided through the support member in spaced relation to anchor at points on the ball member which are remote from its ball surface. A manual actuator projects from the ball and through the socket member to a location where it is accessible to an operator. In this arrangement, the cable ends are masked from view from the operator side of the control and the control includes mounting

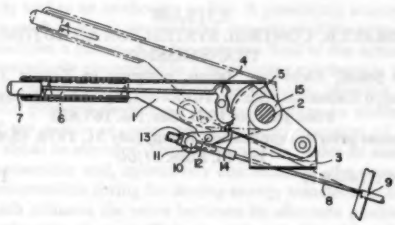


connections which seal off the unit against passage of dirt or fluid and which prevent insertion of small foreign objects that might impair the operation of the unit.

3,719,106
VARIABLE RATIO OPERATING LEVER

Hans O. Schroter, Robert-Koch-Strasse 18, Munich, Germany

Filed May 3, 1971, Ser. No. 139,667
Claims priority, application Germany, May 2, 1970, P 20 21 504.7
Int. Cl. G05g *1/04*
U.S. Cl. 74—518 **7 Claims**



A variable ratio operating lever is pivotally mounted so as to be moveable between release and braking positions and has a control lever pivotally mounted thereon. An actuating element is connected to the control lever and extends to the linkage or other apparatus which is to be operated. One end of the control lever abuts a stationary stop when the operating lever is in its release position and the control lever is pivoted by the stop when the operating lever is moved from its release position so that the distance between the longitudinal axis of the actuating means and the operating lever pivot is rapidly decreased to a minimum.

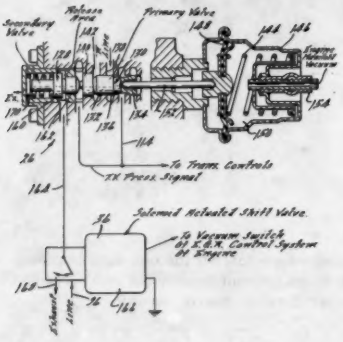
3,719,107
TWO-STAGE THROTTLE VALVE FOR AN AUTOMATIC TRANSMISSION

Edwin F. Jagdmann, Northville, and George E. Lemieux, Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 2, 1971, Ser. No. 195,030
Int. Cl. B60k *21/02*
U.S. Cl. 74—843 **4 Claims**

A throttle valve system for an automatic power transmission mechanism in an automotive vehicle driveline

having an internal combustion engine with an exhaust gas recirculation control, said throttle valve system being adapted to produce a pressure signal that is related functionally to the magnitude of the engine torque and including a diaphragm actuator that is subjected to engine intake manifold pressure and a secondary throttle valve that



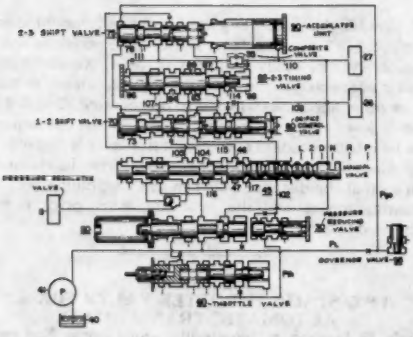
modifies the valve actuating forces of the diaphragm actuator to compensate for the effect of the exhaust gas recirculation control system on the engine intake manifold, thereby tending to maintain the desired relationship between engine torque and the output pressure signal of the throttle valve system.

3,719,108

HYDRAULIC CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION

Ichio Sakai, Aichi-ken, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed July 30, 1971, Ser. No. 167,621
Claims priority, application Japan, July 31, 1970, 45/66565
Int. Cl. B60k *21/00*
U.S. Cl. 74—869 **1 Claim**



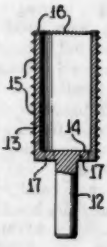
In a hydraulic control system for the automatic transmission of a vehicle, an arrangement is provided for controlling the supply and release of pressurized oil to a first hydraulic servo for operating the vehicle under high speed conditions and to a second hydraulic servo for operating the vehicle under low speed conditions. The hydraulic control system includes oil passages connected to the first and second hydraulic servos, a speed-change valve, a timing valve and a manual valve. Based on a signal determined by the running speed of the vehicle the speed-change valve controls the flow of pressurized oil to the first hydraulic servo. The timing valve is in communication with both the first and second hydraulic servos and opens and closes flow to the second hydraulic servo. The timing valve includes a valve housing which forms separate oil chambers and a valve body which is displaceable within the housing for controlling the flow of oil therethrough. The manual valve has a number of positions for selecting the desired speed condition of the vehicle and the oil passages provide communication between the manual valve and the timing valve. Ordinarily, when operating under high speed conditions and the pressurized oil supplied to the first servo drops below a predetermined value corresponding to the engine output of the vehicle, the valve body is displaced so that pressurized oil is supplied to the second hydraulic servo through one of the oil chambers in the timing valve. However, if the valve body becomes stuck the usual supply of pressurized oil cannot be directed to the second servo and to assure that proper low speed conditions are provided, pressurized oil is supplied to the timing valve through the manual valve and then is conveyed through the proper oil chamber and oil passage to the second hydraulic servo.

3,719,109

RASP AND METHOD FOR ITS MANUFACTURE

Carl Zenses, Duppelstrasse 58, Remscheid-Haddenbach, Germany

Continuation-in-part of application Ser. No. 681,704, Nov. 9, 1967. This application Aug. 3, 1970, Ser. No. 60,575
Int. Cl. B21k *21/00*
U.S. Cl. 76—101 A **10 Claims**



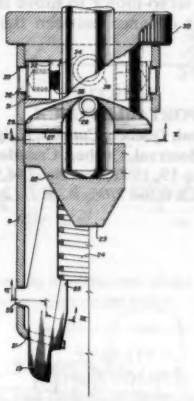
There is provided a rasp in the form of a cylindriform rasp body open at one end and closed at its other end with a shaft projecting from the closed end and adapting the rasp for mounting on a driving motor, rasp cutting serrations being angularly disposed on the end surface of the cylindrical wall at the open end of the body. The body may have thereon a flange-like widening at the open end of the body and equipped with rasp cutting media and this widening may be integral or formed on an insert mountable in the hollow of the body, or the rasp optionally may include a spring projected centering plunger in the hollow of the insert, or it may include a spiral drill projecting axially a predetermined distance beyond the open end of the body and forming an integral part of the mounting shaft.

3,719,110

WRENCH

Gabriel M. LaPointe, Worcester, Mass., assignor to Parker Mfg. Company, Worcester, Mass.

Filed Oct. 22, 1970, Ser. No. 83,264
Int. Cl. B25b *13/32*
U.S. Cl. 81—116 2 Claims



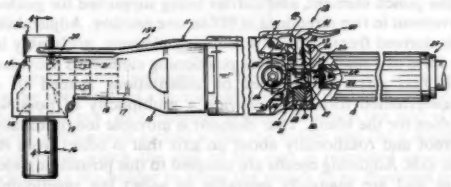
This invention relates to a wrench and, more particularly, to a tool for turning a nut or the like and including a plurality of clamping fingers or jaws.

3,719,111

MARKING DEVICE FOR TORQUE APPLYING TOOL

Jon A. Study, Grosse Pointe Woods, Mich., assignor to Carco, Inc., Detroit, Mich.

Filed May 27, 1971, Ser. No. 147,455
Int. Cl. B25b
U.S. Cl. 81—52.5 10 Claims



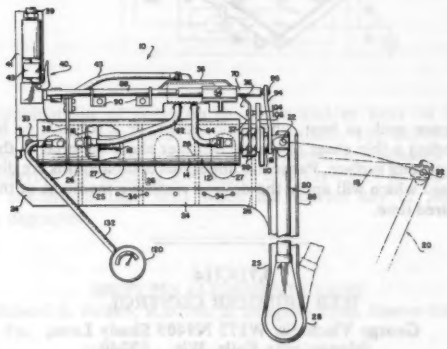
A marketing device adapted to operate in conjunction with a tool of the type for applying a predetermined torque to a rotatable fastening member to mark the fastening member to indicate a completed application of the predetermined torque. The torque applying tool delivers the predetermined torque to the rotatable fastening member through a hollow rotatable work spindle which, in turn, is driven by a fluid motor. Suitable valving means are provided to selectively direct pressure fluid to the fluid motor to drive the same. The marking device comprises a valve member disposed in the hollow portion of the rotating spindle and responsive to a pressure fluid signal generated by the torque applying tool upon the completed application of the predetermined torque to eject a marking fluid onto the fastening member. In other embodiments of the invention the marking device is mounted on the exterior of the tool and at a position which is remote from the tool.

3,719,112

DEVICE FOR TURNING AN ELEMENT

Kenneth C. Kaelon, Rosemaed, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Aug. 24, 1970, Ser. No. 66,481
Int. Cl. B25b *13/46*
U.S. Cl. 81—57.39 10 Claims



An assembled device for turning or torquing an element such as a nut, bolt or the like, comprising a pneumatic actuator operatively connected to a ratchet wrench, both being peculiarly tied to an anchoring or bar. A pneumatic source of pressure, such as air, is provided for operation of the actuator which includes a piston. A valve conveys fluid to the actuator and is operatively connected to a positioning mechanism provided for automatically actuating the valve to transmit the pneumatic pressure developed by the fluid flow to alternate sides of the piston in order to obtain reciprocation of the wrench about its element. This mechanism includes an assembled displaceable rod, operatively connected to the wrench, and a compressible spring for storing energy transferable to an arm which actuates the valve between its alternate positions. The mechanism stores sufficient energy during either half-cycle of such reciprocation to snap the arm at each end of travel of the wrench's angular rotation. The valve may be locked in either of its alternate positions by a detent means holding the arm in a corresponding one of its two positions. A cylinder means for directly measuring the force developed by the pneumatic actuator is mounted between the latter and the reaction bar to which it is connected, and a gauge is provided to record the force required to turn the element.

3,719,113

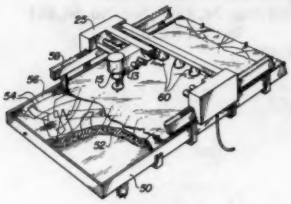
PENETRABLE BED USED FOR CUTTING SHEET MATERIAL AND METHOD FOR TREATING SAME

Heinz Joseph Gerber, and David Raymond Pearl, both of West Hartford, Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed Dec. 3, 1970, Ser. No. 94,882
Int. Cl. B26d *7/08, 7/10*
U.S. Cl. 83—56 17 Claims

A bed of material provides a supporting surface for supporting sheet material during a cutting process. The bed is used in combination with a cutting apparatus having a cutter and a means for moving the cutter and the bed with respect to each other. The supporting surface is penetrated and cut during the sheet material cutting operation. At least the top layer of the

bed material is of such a nature that it may be restored to a substantially uncut or healed condition after having been penetrated and cut to the point where its capacity for properly supporting sheet material is impaired. This restoration may be accomplished by subjecting the bed material to a restoring influence such as heat, ultrasonic waves, or a solvent, or by bonding a thin sheet of plastic or other sheet material to the supporting surface. Particular apparatus combinations are disclosed which will apply the desired restoring mediums at the desired time.



3,719,114

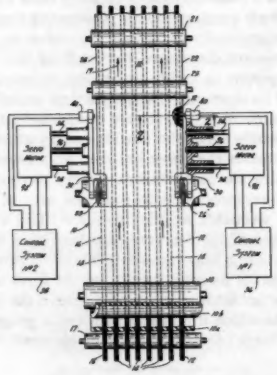
WEB TRIMMER CONTROL

George Vischulis, W172 N9409 Shady Lane, Menomonee Falls, Wis. 53240

Filed Oct. 29, 1971, Ser. No. 193,637

Int. Cl. B23d *19/00*

U.S. Cl. 83—74 11 Claims



Apparatus and control means therefor for trimming excess material from the edges of a tire web having a multiplicity of steel wires embedded between two laminated sheets of rubber and running parallel to the edge comprises: a trimming blade for cutting excess material from the edge, a detector head including an oscillator coil located downstream of the blade and adjacent to the trimmed edge of the web for sensing the location of the outermost wire. Both the blade and the detector head are mounted in fixed positions on a supporting structure or carriage which is adjustably movable transversely to the web so the blade can maintain a constant dimension between the outermost wire and the trimmed edge of the web. The carriage is movable by a screw drive mechanism which is powered by a servo-motor. An oscillator circuit energizes the oscillator coil in the detector head and changes in amplitude of coil oscillation voltage caused by lateral movement of the outermost wire toward or away from the detector head (indicating a change in the desired constant dimensions) are sensed by a detector circuit, integrated and amplified to provide control signals representative of dimensional changes and employed to control energization of the servo-motor to move the carriage and maintain a constant distance between the blade and the outermost wire.

3,719,115

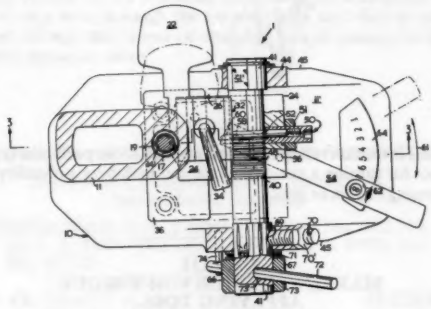
PORTABLE PUNCH

George Muri, Montreal, Quebec, Canada, assignor to DBM Industries Limited, Montreal, Quebec, Canada

Filed May 19, 1971, Ser. No. 144,925

Int. Cl. B26d *7/06*; B26f *1/12*

U.S. Cl. 83—414 11 Claims



A portable key punch is described for removing material from a blank by cutting to provide a selected profile on the blank. A punch element is provided with the blank being supported upon a carrier in a predetermined orientation relative to the punch element, said carrier being supported for guided movement in two directions at 90° to one another. Adjustability is derived from a single positioning element, preferably in the form of a single shaft. This positioning element is provided with two series of notches or indentations spaced in a predetermined format to provide a multiplicity of possible profiles for the blank. That element is movable longitudinally thereof and rotationally about an axis that is offset from its own axis. Adjusting means are coupled to this positioning element and are manually operable to select the positioning needed of that element to enable the carrier and blank to be moved in a manner allowing the profile selected to be cut into said blank.

3,719,116

UNDERWATER SAW FOR TREE AND STUMP REMOVAL

Cyril Burton, Sunrise Valley Trailer Park, and Douglas Steeves, 1908-12th Ave., both of Prince George, British Columbia, Canada

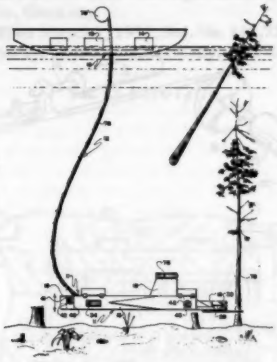
Filed Sept. 22, 1971, Ser. No. 182,612

Int. Cl. B27b *5/02*; B63c *11/48*

U.S. Cl. 83—483 16 Claims

An underwater component is connected to a surface vessel by means of a flexible umbilical connection which includes an anchor cable, hydraulic lines, control lines, and television and light connections. The component includes hydraulically operated propellers for controlling the attitude and position of

the component, a television camera and light source for viewing the underwater scene from the surface vessel and a pair of



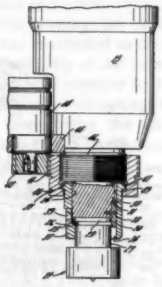
saw blades rotating in a horizontal plane by hydraulic motors to cut off trees and stumps under water.

3,719,117

PUNCH HOLDER

Robert W. Mauk, and William B. Scott, both of W. A. Whitney Corp., 650 Row Street, Rockford, Ill.

Filed July 29, 1971, Ser. No. 167,326
Int. Cl. B26d *1/06*
U.S. Cl. 83—698 **14 Claims**



A punch press includes a tubular punch holder telescoped on the lower end of a reciprocable ram for up and down movement between (a) a clamped position in which the end of the ram holds a punch locked within the holder and (b) a released position in which the end of the ram is retracted upwardly relative to the holder to allow the punch to be removed from the holder. Formed in the side of the holder is an entryway correlated in size and shape to that of the punch so that the punch may be inserted into and removed from the holder by being moved radially in and out of the holder when the latter is in the released position.

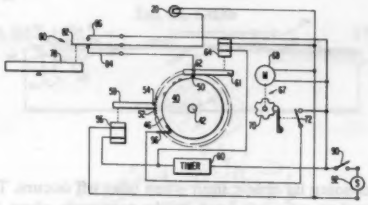
3,719,118

PIANO INSTRUCTION DEVICE

John P. Colburn, 360 Sherman Ave., Council Bluffs, Iowa

Continuation-in-part of application Ser. No. 99,027, Dec. 17, 1970. This application July 13, 1971, Ser. No. 162,122
The portion of the term of the patent subsequent to Sept. 12, 1989, has been disclaimed
Int. Cl. G09b *15/08*
U.S. Cl. 84—478 **10 Claims**

A device to teach pupils to read music and identify notes on a keyboard instrument and promote efficiency in the performance of musical exercises is presented. The device includes a scale representation visually displaying notes as flashing lights, a keyboard representation visually displaying keys to be played as flashing lights said representations selectively controlled by an electromechanical signal device for successively displaying preselected



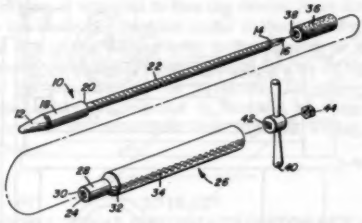
combinations of notes on the scale and/or keys on the keyboard for a preselected period of time. The keyboard and pedals of the instrument if desired, are adapted to interrupt the flashing note-lights and key-lights to display a continuous light only when the correct key or pedal is depressed.

3,719,119

DRIFT PIN ALIGNMENT CLAMP

Richard K. Straub, R.D. No. 2, Douglass Road, Beaver Falls, Pa.

Filed May 17, 1971, Ser. No. 144,177
Int. Cl. F16d *13/06*
U.S. Cl. 85—70 **4 Claims**



A drift pin alignment clamp comprising first and second insert members threadedly engaging each other with a compressible rubber collar mounted therebetween for expansion due to compression created by threading the first and second members toward each other, the first and second members and rubber collar each being adapted to be inserted through construction beam apertures to aid in their alignment and to secure the beams in flush engagement with each other by expanding the rubber collar after insertion. The first insert member has a tapered tip portion which aids in the insertion when the beams are initially slightly out of alignment, and a tightening knob at the end opposite the tip for easily expanding the rubber collar after insertion.

3,719,120

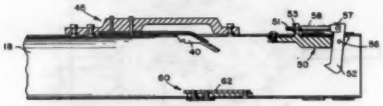
ROCKET LAUNCHING SYSTEM

Alton P. Elder, Klamath Falls, Oreg., and Vincent J. Taylor, China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 29, 1970, Ser. No. 50,516
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.814 **3 Claims**

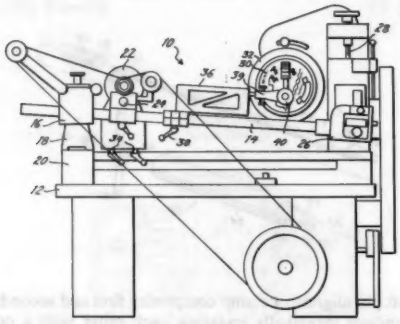
A rocket launcher having a plurality of launcher tubes mounted within a substantially cylindrical housing. The hous-

ing is of relatively "thin-wall" construction except for the front and rear reinforced bulkheads joined by a top rib or strongback. The front and rear bulkheads are of laminated construction. The firing circuit is grounded through the intervalometer except when switched to a "fire" position. A stop member has been added to prevent the detent stop device



from exceeding its elastic limit when blast off occurs. The rib of the rocket stop has been made extremely close to the peripheral distance between the extremities of adjacent fins to more accurately position the rockets in the tubes and a stray voltage test jack and safety switch has been added to the firing circuit.

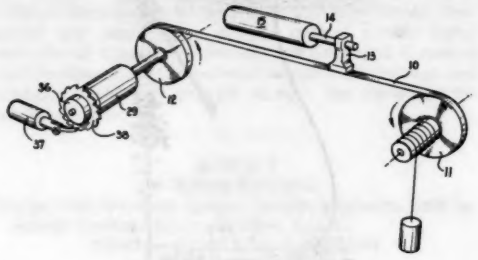
3,719,121
REDUCING APPARATUS AND METHOD
Roy E. Okell, Broomall, and Harold Kirkham and Kathleen E. Kirkham, Upper Darby, Pa., assignors to Franklin Mint Corporation, Yeadon, Pa.
Filed June 5, 1970, Ser. No. 43,897
Int. Cl. B23c *1/18*
U.S. Cl. 90—13.7 **8 Claims**



Apparatus and method are disclosed for optically scanning a picture and reproducing a die of the picture on a reduced scale. The picture must have true shade depth.

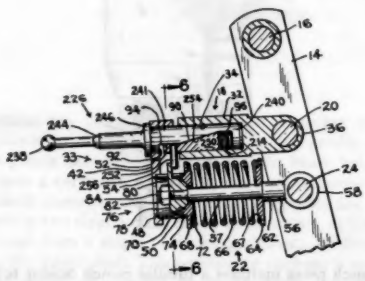
3,719,122
CONTROL MEANS AND A METHOD OF CONTROLLING THEREBY
John Maximilian Jules Varga, Brighouse, England, assignor to Carding Specialists (Canada) Limited
Continuation-in-part of application Ser. No. 887,388, Dec. 22, 1969. This application Oct. 22, 1971, Ser. No. 191,807
Int. Cl. F15b *21/02*; G05b *19/10*; B23q *35/00*
U.S. Cl. 91—37 **31 Claims**

A control means for a machine including a pre-recorded programme containing element in, for example, magnetic tape form, and at least one movable scanning head located adjacent the element and connected to a part of the machine to be moved in accordance with the programme, there being on the programme containing element or associated with it a reference signal containing element arranged to be scanned by an additional head so that signals from the scanning heads may be passed to a com-



parator to enable the moving part to be stopped, reversed and otherwise controlled and for corrections to be made in the manner in which the machine part is moved.

3,719,123
FRICTIONAL LOCK FOR DUAL RATIO PEDAL DEVICE
Maxwell L. Cripe, South Bend, Ind., assignor to The Bendix Corporation
Filed May 27, 1971, Ser. No. 147,494
Int. Cl. F15b *13/10, 7/00*
U.S. Cl. 91—391 **17 Claims**



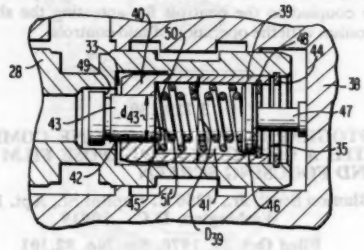
A brake activating mechanism for transmitting a dual ratio input force in response to an operational force needed to activate a servomotor. A lever arm pivotally attached to a support has a first and second force transmitting member pivotally located at different distances on the lever arm. The first force transmitting member is slidably attached to a valve rod which operates the servomotor. A side projection is fixed to the valve rod. The second force transmitting member has a first resilient member which surrounds a shaft which moves through the side projection as the resilient member is compressed and transmits an input force to the side projection. A second resilient member responsive to the movement of the shaft positions a locking wedge to frictionally engage the first force transmitting member with the valve rod when a predetermined operative force is required to activate the servomotor. When the first force transmitting member is frictionally engaged and combined with the second force transmitted through the first resilient member, an additive output force sufficient to activate the servomotor for energizing a master cylinder can be produced.

3,719,124

SERVO-STEERING SYSTEM FOR VEHICLES

Klaus Katz, and Manfred Bulow, both of Stuttgart, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed March 1, 1971, Ser. No. 119,720
Claims priority, application Germany, Feb. 28, 1970, P 20 09 574.3
Int. Cl. F15b 13/14
U.S. Cl. 91—434 25 Claims



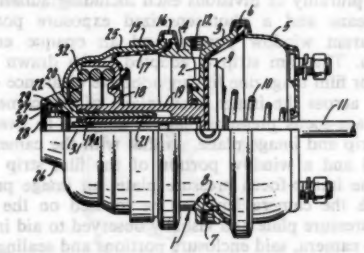
A servo-steering system for vehicles with a servo-motor assisting the manual force at the steering wheel which is controlled by way of a control slide valve in dependence on a transmitter element responding to the movements of the steering wheel; a reaction pressure derived from the load pressure and counteracting the manual force is rendered effective between the valve spool and a respective reaction piston supported against the valve housing; the reaction piston consists of a first piston part that is adapted to be supported fixedly at the valve spool and elastically at the valve housing, and of a second piston part movable relative to the first piston part, which is adapted to be supported against the valve housing by elastic means; after overcoming the elastic means for the second piston part, the latter is fixedly supported at the valve spool by the reaction pressure.

3,719,125

FORCE ADJUSTABLE ACTUATOR

Joseph L. Cannella, Melrose Park, Ill., assignor to The Berg Manufacturing Company, Des Plaines, Ill.

Filed May 18, 1971, Ser. No. 144,543
Int. Cl. F01b 31/00
U.S. Cl. 92—133 2 Claims



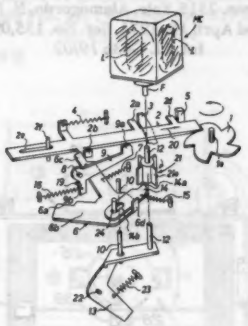
A brake actuator including a brake-applying spring and means for adjusting the force of said spring throughout its excursion.

3,719,126

PHOTOGRAPHIC APPARATUS FOR USE WITH PERCUSSIVE MULTILAMP PHOTOFLASH UNITS

Dieter Engelsmann, Unterhaching, and Rolf Schroder, Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 28, 1971, Ser. No. 166,703
Claims priority, application Germany, July 30, 1970, P 20 37 967.3
Int. Cl. G03b
U.S. Cl. 95—11.5 17 Claims



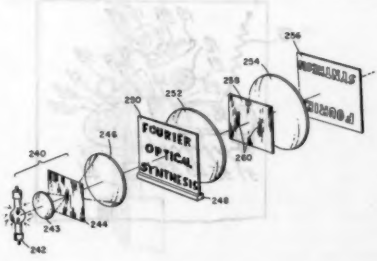
A photographic camera for use with indexible percussive multilamp photoflash units wherein the lamps can be fired in response to transmission of mechanical impacts to firing cartridges or the like. The camera body contains a three-armed driving lever which is pivotable from an uncocked to a cocked position whereby one of its arms receives motion from the film transporting and/or shutter cocking mechanism and another arm indexes the photoflash unit by way of a pawl. When the camera release is actuated to free the driving lever for movement to the uncocked position under the action of a spring, the third arm of the driving lever strikes against an impeller which causes the firing of a lamp, either directly or indirectly through the intermediary of a further impeller in the photoflash unit. The impeller is blocked in response to detachment of the photoflash unit from its socket in the camera body.

3,719,127

SPECTRAL ZONAL INFORMATION STORAGE AND RETRIEVAL

Peter F. Mueller, Concord, Mass., assignor to Technical Operations, Incorporated, Burlington, Mass.

Continuation-in-part of Ser. No. 726,455, May 3, 1968, Pat. No. 3,664,248, which is a continuation-in-part of Ser. No. 564,340, July 11, 1966, abandoned. This application April 1, 1971, Ser. No. 130,163
Int. Cl. G03b 33/00
U.S. Cl. 95—12.2 3 Claims



This disclosure depicts methods and means for implementing a novel optical information processing technique utilizing

a phenomena (herein termed Fourier optical synthesis) involving effecting a complex amplitude addition of diffraction spectra characterizing two or more object functions. The processed object functions may represent totally different scenes, or color separation functions of a common colored scene. The disclosure stresses novel mosaic three zone spectral zonal encoding filters and methods of color information storage and retrieval using the novel filters.

3,719,128

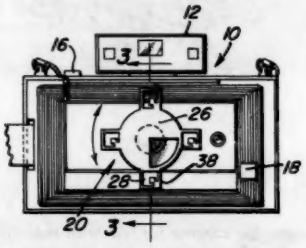
SHIFTABLE LIGHT MASK FOR CAMERA LENS

Roger R. Simmons, 2515 Yale, Alamogordo, N. Mex.

Filed April 19, 1971, Ser. No. 135,097

Int. Cl. G03b *19/02*

U.S. Cl. 95—36 **4 Claims**



A structure basically resembling a lens cap and releasably frictionally engagable over the lens barrel of a particular design of camera. The end wall is, however, provided with a slightly less than one-quarter sector opening for registry with a one-quarter sector of the associated camera lens. The structure is designed for adjustable rotation relative to the associated lens barrel and the opening in the end wall thereof may therefore be successively registered with four one-quarter sectors of the associated lens so that the lens may be effectively masked in a manner enabling a single frame of film to have the four corner portions thereof successively exposed with the result that each film frame may be utilized to produce four different photographs.

3,719,129

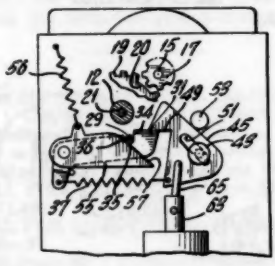
DRIVE MECHANISM

Harold Gallina, 40 Parkview Avenue, Belleville, N.J.

Filed June 10, 1971, Ser. No. 151,849

Int. Cl. G03d *13/04*

U.S. Cl. 95—53 R **13 Claims**



A drive mechanism which includes a drive gear continuously driven by a drive motor, a spur gear having a plurality of teeth removed from a portion of the periphery thereof, and novel controls for engaging and disengaging the driven gear from the drive gear. The controls include a spring biased element positively locking the spur gear as the spur gear is disengaged from the drive gear, a trigger releasing the spur gear from the locked position, and an actuating element moving the spur gear into engagement with the driving gear as the trigger releases the spur gear from the locked position. The controls are adapted to permit the drive gear to rotate the spur gear through a predetermined angle and then apply a positive brake to the spur gear each time the trigger is actuated regardless of the length of time during which the trigger is actuated and at a wide range of repetition rates of trigger actuation. The mechanism may further include a photographic shutter coupled to the controls for actuating the shutter in synchronism with the operation of said controls.

3,719,130

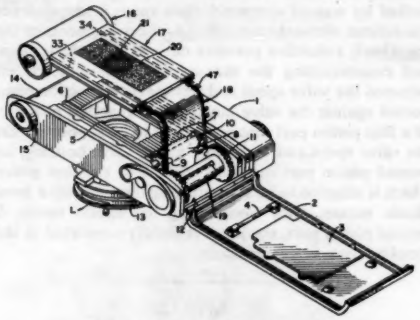
PHOTOGRAPHIC FILM MAGAZINE COMBINED WITH A CODED MULTIPURPOSE FILM STRIP AND FOCUSING SCREEN

Blanton Scott, Jr., 4250 E. Capitol St., Apt. 104, Washington, D.C. 20019

Filed Oct. 20, 1970, Ser. No. 82,301

Int. Cl. G03l *3/00*

U.S. Cl. 95—44 R **44 Claims**



Focusing apparatus for a camera having a lens, an image focal plane, and an openable back, to aid in focusing the camera for taking photographs, including an image-focus pressure plate having means thereon for resolving an image, and a film strip divided longitudinally into a plurality of divisions each including adhesive sealing means and a photosensitized exposure portion, a transparent window portion and an opaque enclosure portion. The film strip is adapted to be drawn from a spool or film magazine having adhesive clearance channel means across the image focal plane of the camera, and the image-focus pressure plate is adapted to overlie the film strip and image plane, so that with the camera back opened and a window portion of the film strip aligned with the image-focus pressure plate, an image projected through the camera lens can be focused on the image-focus pressure plate and visually observed to aid in focusing the camera, said enclosure portions and sealing means of the film shielding the photsensitized portions to prevent exposure thereof when the camera back is thus opened, and said image-focus pressure plate and film strip being constructed such that photographs can be taken with the image-focus pressure plate in position in the camera.

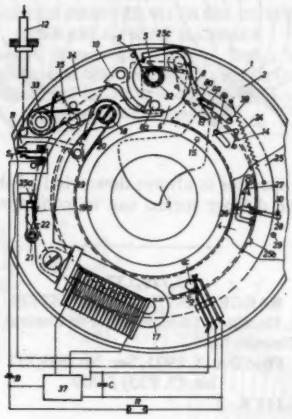
3,719,131
PHOTOGRAPHIC SHUTTER WITH ELECTRONIC TIMING DEVICE

Jörg Sohn, Calmbach, Black Forest, Germany, assignor to Prontor-Werk Alfred Gauthier G.m.b.H., Calmbach, Black Forest, Germany

Continuation of abandoned application Ser. No. 766,606, Oct. 10, 1968. This application May 10, 1971, Ser. No. 142,023

Int. Cl. G03b 9/14

U.S. Cl. 95—53 E 3 Claims



A photographic shutter is provided having a reciprocating sector driving member and electro-magnetic unit for locking the driving member in the open position. Electronic timing apparatus is provided for determining the time the electro-magnetic unit holds the driving member locked in the open position. Advantageously the control member cooperates with two independently controllable locking members and the electro-magnetic unit for locking and unlocking the driving member. The control member is operable to be coupled to the driving member in the open position of the sectors.

3,719,132
ADAPTOR FOR ADJUSTMENT OF VISIBILITY IN VIEWFINDER OF A PHOTOGRAPHIC CAMERA

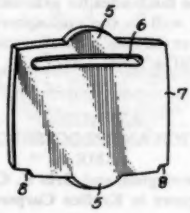
Fumio Urano, Tokyo-to, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed July 21, 1971, Ser. No. 164,682

Claims priority, application Japan, July 30, 1970, 45/76016

Int. Cl. G03b 13/12, 13/02

U.S. Cl. 95—11 V 4 Claims



An adaptor for adjustment of visibility in the viewfinder of a photographic camera. A lens provides adjustment of the visibility. The lens has a pair of locking projections on the periphery thereof disposed in opposition to each other. A slit in the lens extends adjacent to the portion of the periphery from which one of the projections projects and provides a reduced resiliency to the lens allowing the projections to be collapsed inwardly. A viewfinder eyepiece frame has an opening. A step-like portion in the opening serves to expand the opening. At least two locking grooves are formed on opposing portions of the opening such that the projections are engaged into the grooves.

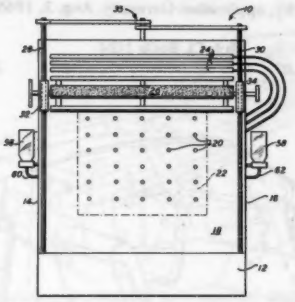
3,719,133
LITHOGRAPHIC PLATE DEVELOPING APPARATUS

Edward F. Haracz, 4-12 Orono Street, Clifton, N.J.

Filed Feb. 18, 1972, Ser. No. 227,533

Int. Cl. G03d 5/04

U.S. Cl. 95—89 R 9 Claims



Developing of lithographic plates is accomplished on apparatus providing for applying the various chemicals used in the developing process by moveable applicators and spreading contact members. The applicators and spreading contact members move cyclically back and forth over the surface of the lithographic plate and are selectively operable to apply and spread any given chemical or water to the surface during any given cycle of the applicator and contact member assembly.

3,719,134
VENTILATING SYSTEM FOR VEHICLES

Hans Korinth, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Dec. 29, 1970, Ser. No. 102,415

Claims priority, application Germany, Dec. 30, 1969, P 19 65 574.4

Int. Cl. B60h 1/24

U.S. Cl. 98—2 8 Claims

A heating and/or ventilation system for vehicles, in particular for motor vehicles in which air is supplied by means of a

blower through ducts, lines or the like into the vehicle interior; the discharge apertures of the lines, channels or the like are thereby arranged behind cover parts of the vehicle interior or behind cushioned parts in the vehicle interior and the supplied air is distributed on all sides inside the cover parts or cushion parts and is discharged from the same through a large number of apertures.

3,719,135

INSTALLATION FOR CONTROLLING THE TEMPERATURE OF VEHICLE INTERIOR SPACES

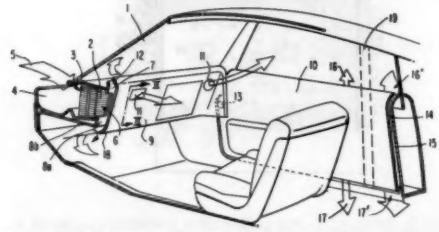
Werner Breitschwerdt, Stuttgart-Botnang; Gunter Gmeiner, Sindelfingen, and Albert Stolz, Singelfingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed July 31, 1970, Ser. No. 60,000

Claims priority, application Germany, Aug. 2, 1969, P 19 39 434.4

Int. Cl. B60h *1/24*

U.S. Cl. 98—2.07 **27 Claims**



An installation for controlling the temperature of vehicle interior spaces, particularly of passenger motor vehicles which include an air conduction channel system adapted to be connected with the vehicle heating system and located within the area below the windshield, and a terminal wall arranged in front of the vehicle passengers approximately between the lower edge of the windshield and the upper boundary of the foot space; at least a part of the air guide channel system is constructed as a cross channel located directly behind the terminal wall which is in communication with an air guide channel and preferably extends over the entire width and height of the terminal wall; the terminal wall itself may be constructed of deformable material and may be adapted to be pivoted down along the lower edge thereof.

3,719,136

METHOD AND MEANS FOR PROVIDING A CLEAN AREA

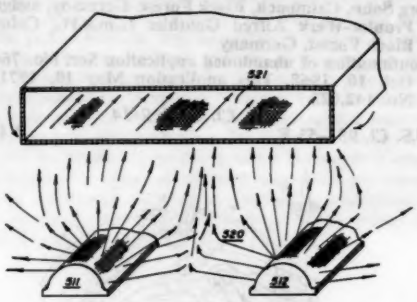
Ernest E. Criddle, Ottawa, Ontario, Canada, assignor to Her Majesty the Queen in Right of Canada as represented by the Minister of National Defence

Filed Sept. 21, 1970, Ser. No. 73,776

Int. Cl. F24f *9/00*

U.S. Cl. 98—36 **7 Claims**

A method and means for providing a particulate free area. In the past clean rooms have been created by positioning diffusers for clean air, or filters which clean the air, immediately adjacent the area to be cleaned. The clean air was beamed across the area to be cleaned and an operator who had to approach the clean area from an up-wind side contaminated the clean area. Also, diffusers and filters were of such a massive construction that frequently they limited access to the operating area. The inventor provides tubular diffuser means which are spaced about the area to be cleaned and low velocity clean air is diffused through the periphery of the diffuser means in such a fashion that currents directed inwardly towards the work area from opposite sides thereof directionally influence each other and create a resultant current substantially normal to and away from said area. In this



fashion an operator is always downwind of the operating area and the diffuser means can be comparatively small in size.

3,719,137

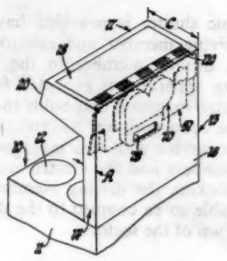
RANGE VENTILATING SYSTEM

Ira L. Gould, Hamilton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 1, 1971, Ser. No. 203,737

Int. Cl. F23j *11/00*

U.S. Cl. 98—115 K **6 Claims**



A venting system for a high console range incorporating a pair of propeller fans for operation in a restricted hollow riser between the range cooktop and the high console hood. The fans may be used interchangeably in either a room air recirculating system or a vented to the outside atmosphere system by virtue of the fan blades being located in side-by-side orifices in a vertical shroud wall forming a fan blade plenum chamber providing fan blade housing means in conjunction with either a removable air guide directing the air to a room vent operative with the recirculating system or a removable double-lobed shroud enclosing the fan blades for exhausting air by ducting through a building wall to the atmosphere. The adaptable housing thereby alters the fans' axial characteristics to provide mixed radial and axial air flow.

3,719,138

FROZEN SANDWICH AND PROCESS FOR PREPARING SAME

Philip H. Blaetz, Barrington, and Orin K. Corbige, Glenview, both of Ill., assignors to Kraftco Corporation, New York, N.Y.

Filed Feb. 9, 1970, Ser. No. 9,985

Int. Cl. A21d *13/00*, *15/00*

U.S. Cl. 99—192 **15 Claims**

A filled sandwich is provided which is suitable for heating in a vertical position without loss of filling and which may be re-

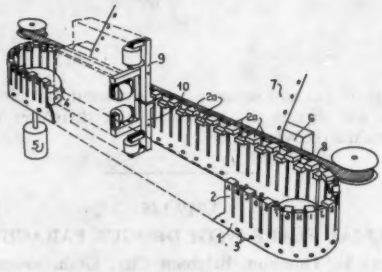
heated from a frozen condition without excessive browning of the exterior surface of the sandwich. To prevent browning the frozen sandwich is treated by applying moisture to the exterior surfaces of the sandwich while the sandwich is frozen. Thereafter, the sandwich is returned to frozen storage. During subsequent heating of the sandwich from the frozen state the excess moisture acts to cool the exterior surface of the bread slices during heating until the interior of the sandwich is heated.

3,719,139

HIGH-SPEED PRINTER WITH SELECTIVELY OPERABLE PRINT HAMMER

Adriano Niccolai, Cornaredo (Milan), Italy, assignor to Honeywell Information Systems S.p.A., Turin, Italy

Filed July 14, 1970, Ser. No. 54,814
Int. Cl. B41j *1/20, 9/14*
U.S. Cl. 101—93 C **4 Claims**



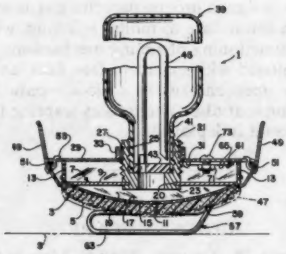
A high-speed printer wherein the type-carrying member is provided with staggered rows of projections on the reverse side of each type character, and wherein a plurality of hammers operating at a print position selectively cooperate with the projections of a respective row.

3,719,140

STENCIL HAND STAMP WITH FLUID-CONTAINING HANDLE AND TORSION-SPRING SUPPORTS

Larry F. Hammel, Herrin, Ill., assignor to Diagraph-Bradley Industries, Inc., Herrin, Ill.

Filed July 27, 1970, Ser. No. 58,494
Int. Cl. B41k *1/22*
U.S. Cl. 101—125 **4 Claims**



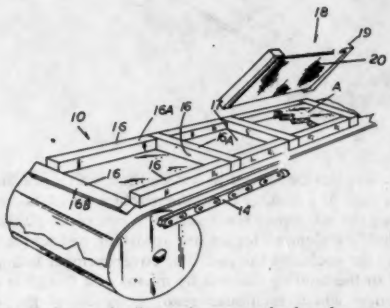
A hand stamp printing implement or duplicator having an inking pad with a convexly curved bottom face with clamps for holding a stencil in place on said face and a pair of spring-biased supports at the ends of the pad for holding the pad lifted off a surface with the bottom of the pad facing downwardly and in position for being moved down toward said surface for contact of the stencil with said surface and rocking of the pad over said surface.

3,719,141

METHOD AND APPARATUS FOR SCREEN PRINTING TILES

David Jaffa, Fairlawn, N.J., and James D. Miller, Dalton, Ga., assignors to Precision Screen Machines Inc., Hawthorne, N.J.

Filed Feb. 19, 1971, Ser. No. 116,770
Int. Cl. B41l *13/00*; B41m *1/12*
U.S. Cl. 101—126 **9 Claims**



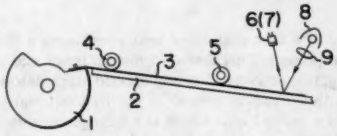
This disclosure is directed to a method and apparatus for screen printing tile by detachably securing to a conveyor a series of positioning bars at spaced intervals for snugly receiving and retaining therebetween a tile to be printed. The height of the respective positioning bars is disposed co-plannar to the surface of the tile to be printed so that the edge of the printing screen overlies the positioning bars to prohibit smearing or slurring of the printing ink along the edge portions of the tile.

3,719,142

AUTOMATIC PLATE CLAMPING AND DISCHARGING DEVICE FOR USE IN OFFSET PRINTING PRESS

Takeshi Abe, Setagaya-ku, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Ota-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 855,452, Aug. 19, 1969, abandoned. This application Nov. 24, 1971, Ser. No. 201,815
201,815
Int. Cl. B41f *27/06*
U.S. Cl. 101—216 **7 Claims**



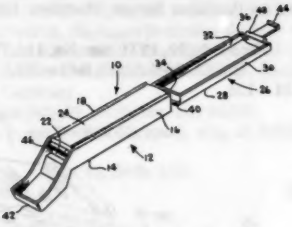
In an offset printing plate having an automatic plate clamping and discharging device, light reflected from or transmitted through both side edges of a plate feed passageway and/or plate cylinder is intercepted by a pair of photoelectric effect elements whereby mis-alignment of the plate edges provides a detectable different electrical output in each photoelectric element. When the printing plate is fed under normal conditions and/or when the printing plate is correctly clamped around the plate cylinder, only a clamp means for clamping the plate around the plate cylinder is actuated. When the plate is fed under abnormal conditions and/or is not correctly clamped, a plate discharge means is also actuated in addition to the clamp means so that the plate which is once clamped, is removed from the plate cylinder and discharged out of the printing press. The plate clamp means as well as discharge means are controlled by electronic circuit means.

3,719,143

DISPOSABLE INKING DEVICE FOR PRINTING APPARATUS

Walter T. Labore, Stamford, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Nov. 23, 1970, Ser. No. 91,840
Int. Cl. B41f 31/24
U.S. Cl. 101—335 5 Claims



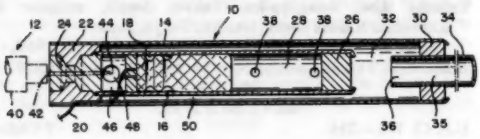
An inking device for use in conjunction with a printing apparatus such as a postage metering machine which is disposable when the ink supply is exhausted. A one piece plastic unit has a holding element for an ink absorbing pad and a cover member for enclosing the pad. The cover member being connected to the holding element by means of a frangible hinge connection which facilitates ready removal of the cover member from the holding element for use of the ink device.

3,719,144

SAFETY TWO-COMPONENT DETONATOR

Elvin W. Tiam, Redmond, Wash., assignor to Explosives Corporation of America, Issaquah, Wash.

Filed Aug. 23, 1971, Ser. No. 174,062
Int. Cl. F42b 3/14
U.S. Cl. 102—28 R 9 Claims



There is a first detonator unit containing a first explosive mix component. This first unit has an inner and outer casing defining, respectively, first and second-stage detonating chambers, with a squib mounted in the first detonating chamber. There is a second unit which is a syringe containing a second explosive mix component which is injected into the detonator unit to mix with the first component to form an explosive liquid mix in the detonating unit.

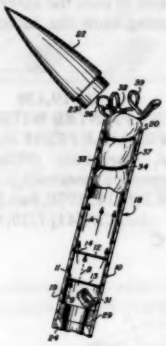
3,719,145

RECOVERY DEVICE EJECTION BAFFLE SYSTEM FOR MINATURE ROCKETS

Lawrence W. Brown and Leroy E. Piester, Phoenix, Ariz., assignors to Centuri Engineering Company, Inc.

Filed July 21, 1971, Ser. No. 164,522
Int. Cl. F42b 13/38
U.S. Cl. 102—34.4 7 Claims

A baffle system for operatively controlling the pyrogenic gas pressure front created by the ejection charge of a rocket engine to eject the recovery device from the body of a miniature rocket. The baffle system, which may be permanently secured within the rocket body, cools the pyrogenic gas and separates the ignescent particles therefrom and directs the pressure front thereafter directly against the recovery device.

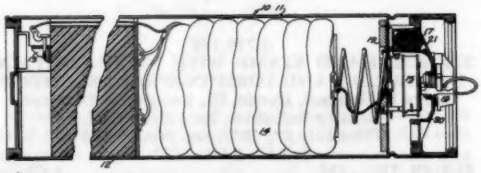


3,719,146

AERIAL FLARE WITH DROGUE PARACHUTE

James R. Thurston, Brigham City, Utah, assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed June 11, 1971, Ser. No. 152,204
Int. Cl. F42b 25/04
U.S. Cl. 102—35.6 7 Claims



A specially designed drogue parachute is attached to the housing of an aerial flare to inhibit spinning, which otherwise impairs functioning of timing mechanisms when such flares are deployed with extensive free falls, as from high altitudes. The open end of the sack-like parachute has a reinforcing ring that also functions as a spring to open the parachute when it is deployed.

3,719,147

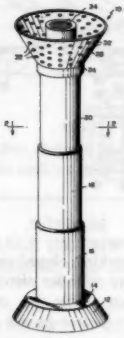
HIGHWAY FLARE

Frederick W. Toporek, 1150 E. Lincoln St., Woodburn, Oreg. 97071

Filed Dec. 16, 1970, Ser. No. 98,520
Int. Cl. C06d 1/04, 1/10
U.S. Cl. 102—37.8 4 Claims

A highway flare for emergency use having a base member of circular configuration and having an inclined surface on an edge thereof for being used as a wheel stop

separately or in conjunction with being used as a highway flare, and having a circular opening in the middle thereof for receiving a telescopic arrangement of interlocking tubes of oval configuration, locking when they are turned into each other, and having at the other end of the telescopic arrangement a flare support means from which



there is supported a flare and a flare reflector of metal, screened material, or the like, for reflecting the illumination of the flare. The flare may be disposable so that after use a new flare element can be inserted therein. The aluminum reflector may be of cone configuration for protecting the flare from coming in contact with foreign bodies.

3,719,148

PRIMER FOR ELECTRIC AND PERCUSSION FUSES FOR CARTRIDGE AMMUNITION

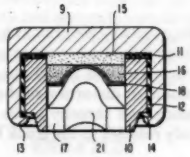
Heinz Gawlick, Furth/Bayern, and Helmut Bendler, Erlangen-Spardorf, both of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed July 10, 1970, Ser. No. 53,774

Claims priority, application Germany, July 11, 1969, P 19 35 376.5

Int. Cl. F42b 9/08; F42c 11/00, 19/12

U.S. Cl. 102—46 **15 Claims**



The present disclosure relates to a primer for electric and percussion priming for use in accordance with the spark-gap principle which comprises a metallic capsule provided with a closed bottom, a thrust ring disposed inside of the metallic capsule and completely insulated therefrom by insulating means, and a gap charge provided inside the thrust ring and adjacent the closed bottom of the metallic capsule, the metallic capsule acting as a first lead electrode to the gap charge and the thrust ring acting as a second lead electrode for the gap charge.

3,719,149

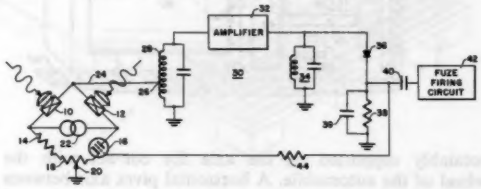
TWO CHANNEL OPTICAL FUZE WITH INFRARED SENSING BRIDGE

George F. Masin, Anaheim, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed July 27, 1962, Ser. No. 214,171

Int. Cl. F42b 5/08

U.S. Cl. 102—70.2 R **2 Claims**



This invention entails a high frequency bias to an infrared sensing bridge arrangement. When energy impinges on either sensor, the bridge becomes unbalanced, and a signal is sent which activates a fuze firing circuit.

3,719,150

MOBILE TRACK TAMPER

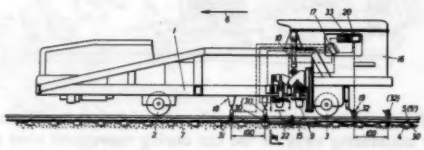
Josef Theurer, Vienna, and Ekkehardt Benda, Linz-Urfahr, Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Dec. 10, 1970, Ser. No. 96,678

Claims priority, application Austria, Dec. 19, 1969, 11,908/69

Int. Cl. E01b 27/16

U.S. Cl. 104—12 **14 Claims**



A mobile track tamper comprises a tamper unit associated with each rail. Each tamper unit includes two groups of vibratory and vertically adjustable surface tamping tools, the distance between the two groups of tools of each unit being variable. The tamping tools of each group are arranged to tamp the ballast in adjacent cribs simultaneously.

3,719,151

AUTOMOBILE CONVEYOR

Dan A. Andersen, Duarte, Calif., assignor to Chem-Therm Mfg. Co., Monrovia, Calif.

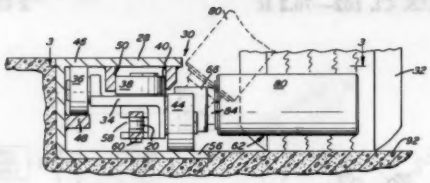
Continuation of abandoned application Ser. No. 822,888, May 8, 1969. This application June 9, 1971, Ser. No. 151,537

Int. Cl. B61j 3/04

U.S. Cl. 104—172 B **8 Claims**

An automobile conveyor is disclosed, comprising an endless chain supported by a pair of spaced sprockets to provide a drive flight and a return flight, and a guide track is disposed adjacent and partly encloses the drive flight. Drive members are coupled to the chain at spaced points thereon, the drive members comprising a dolly

member affixed to the drive chain, and pusher means coupled to the dolly member adapted to drivingly contact the wheel of an automobile. The pusher means comprises an axle pivotably coupled to the dolly member for rotation about a horizontal axis, and a roller member



rotatably supported on the axle for contact with the wheel of the automobile. A horizontal pivot axis between the dolly member and the axle permits the axle and roller member to ride up over obstructions adjacent the chain, and thus provides a safety feature for the conveyor.

3,719,152

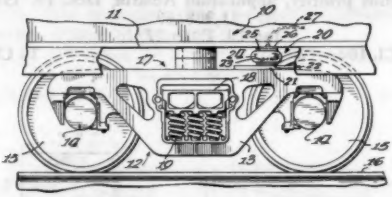
RAILROAD CAR WITH FLUID SIDE BEARING ANTISWAY MEANS

Lynn J. Harter, Hobart, Ind., assignor to Thrall Car Manufacturing Company, Chicago Heights, Ill.

Filed June 12, 1969, Ser. No. 832,626

Int. Cl. B60g *21/06*; B61f *5/14*, *5/24*

U.S. Cl. 105—164 **6 Claims**



Disclosed is an improved railroad freight car having means for minimizing sway of the car during movement over rails. The car has a side bearing walled structure between each wheel truck side frame and the car floor structure. Each walled structure defines an enclosed chamber of variable volume containing a fluid. The car has a conduit communicating with the enclosed chamber and a reservoir tank containing fluid under superatmospheric pressure. The conduit transports fluid from the chamber to the tank upon reduction in volume of the enclosed chamber due to increased pressure on the chamber through swaying of the car body to that side, and transports fluid from the tank to the chamber upon increase of the chamber volume due to decreased pressure on the chamber through swaying of the car body to the other side.

3,719,153

HYDRAULICALLY DAMPENED CAR BOGIE

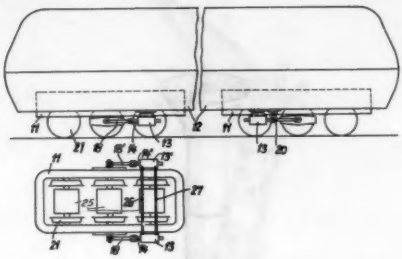
Friedrich Schumacher, Mulheim, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Jan. 7, 1971, Ser. No. 104,646

Int. Cl. B61f *3/10*, *5/16*, *5/50*

U.S. Cl. 105—182 R **6 Claims**

In combination with the truck center pin-free truck forming a first member of a rail vehicle and with a main frame resiliently supported by said truck and forming a second member of the vehicle. Two double acting fluid operable cylinder piston systems are respectively arranged on opposite sides of the truck while each of the cylinder piston systems has a cylinder pivotally connected to one of said members and has a piston pivotally connected to the other one of said members, each cylinder and piston of one and the same cylinder piston



system defining two working chambers,. The working chambers of one and the same cylinder piston system on one side of the truck communicate with the corresponding working chamber of the cylinder piston system on the other side of the truck.

3,719,154

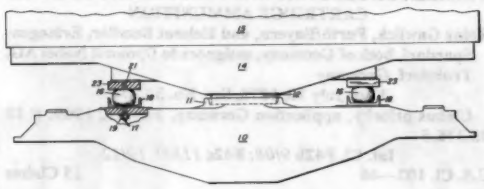
RESILIENT SIDE BEARING ASSEMBLY

David J. Reynolds, Upper Arlington, Ohio, assignor to Buckeye Steel Castings Company, Columbus, Ohio

Filed April 13, 1971, Ser. No. 133,535

Int. Cl. B61f *5/14*, *5/24*; F16c *17/04*

U.S. Cl. 105—199 CB **10 Claims**



Side bearings for a railway freight car having an elastomeric body disposed between the body bolster and the truck bolster. The assembly includes a rigid metal channel member which limits the displacement or distortion of the elastomeric material under compression and thereby limits the swinging movement of the car body relative to the truck bolster.

3,719,155

RAILWAY FLAT CAR HAVING STUB CENTER SILLS

Walter E. O'Leary, Creve Coeur, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

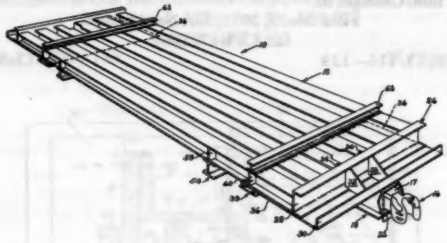
Filed Oct. 9, 1970, Ser. No. 79,466

Int. Cl. B61d *15/00*

U.S. Cl. 105—367 **9 Claims**

A railway flat car having a plurality of spaced beams extending longitudinally of the car, each beam being of generally uniform dimensions and forming an upper lading support surface especially for relatively heavy items such as steel ingots, slabs, coils, billets, and the like. A shear plate is secured beneath the beams adjacent each end of the car and a stub

center sill structure is secured beneath the shear plate adjacent each end of the car. The center sill structure terminates



at a cross bearer member secured beneath the beams and extending transversely the entire width of the car.

3,719,156

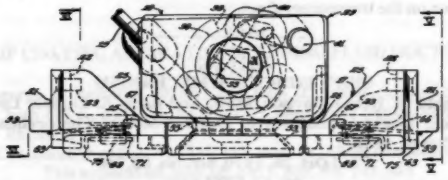
TURNTABLE TIE-DOWN WINCH

Keith W. Broling, Olympia, Ill., assignor to Portec, Inc., Chicago, Ill.

Continuation of Ser. No. 815,132, April 10, 1969, abandoned. This application March 3, 1971, Ser. No. 120,714

Int. Cl. B60p *7/08*; **B61d** *45/00*

U.S. Cl. 105—369 A **15 Claims**



Turntable tie-down winch for tying lading to freight vehicles. The winch includes a winch block having a flexible tie-down adapted to be wound thereon and is mounted for adjustable movement along a channel extending along the deck of the vehicle. The winch is mounted on a base for adjustable movement about a vertical axis and for limited movement along said axis and is freely adjustable about said vertical axis as tension is relieved from the flexible tie-down and is locked from turning movement by an interengaging connection between the winch and base as tension is taken up on the tie-down, to bring the interengaging connection into locking engagement. Locking devices are mounted on opposite ends of the base for the winch and normally extend over the edge portions of the base and automatically engage the tops of retaining flanges of the channel and hold the winch in position as the winch is elevated in its channel by pulling upwardly on the flexible tie-down.

ERRATUM

For Class 105—366 D see:
Patent No. 3,719,794

3,719,157

PALLET ASSEMBLY

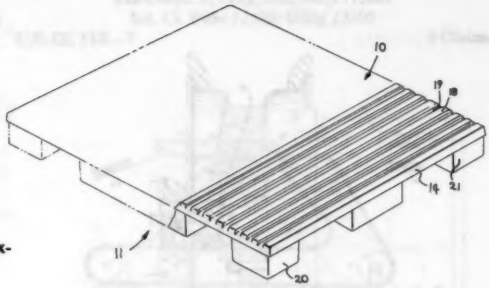
Humberto L. Arcocha; Paul W. Dullabaun, and Fred E. Lauffer, all of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Sept. 21, 1970, Ser. No. 74,006

Int. Cl. B65d *19/00*

U.S. Cl. 108—51 **1 Claim**

A pallet assembly having an outer shell formed from sheet material. The outer shell provides a water-tight, moisture-resistant, and smooth outer surface. A stiffening assembly is positioned within the shell and reinforces the pallet assembly. The outer shell is formed of sheet material, preferably a thermally formable plastic. Supporting pads are formed in the bottom shell. The supporting pads are reinforced with a foamed hardened plastic.



3,719,158

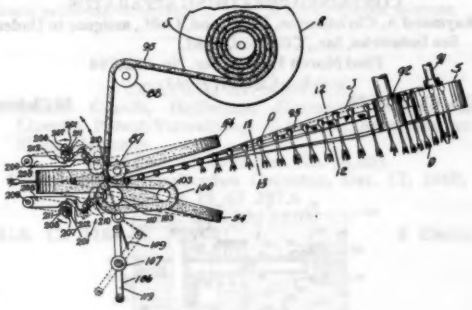
TRANSPLANTING MACHINE

Herbert C. O. Roths, 316 Wilson Drive, St. Louis, Mich.

Continuation-in-part of Ser. No. 545,366, April 26, 1966, abandoned. This application Feb. 14, 1968, Ser. No. 705,351

Int. Cl. A01c *11/02*

U.S. Cl. 111—2 **11 Claims**



This invention relates to an automatic transplanting machine which is adapted to receive a plant-loaded magazine thereon. A pair of side-by-side convergent resilient endless belts which are provided to receive the plants from the plant-loaded magazine have a downward path of travel leading to a position adjacent the ground. The endless belts then diverge to release the plants.

3,719,159

FLUID PRESSURE CONDITION WARNING DEVICE

Robert L. Davis, Mogadore, Ohio, assignor to The General Tire & Rubber Company

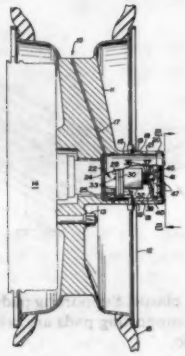
Filed Dec. 30, 1971, Ser. No. 214,090

Int. Cl. B60c *23/02*

U.S. Cl. 116—34 **12 Claims**

A device responsive to fluid pressure for detecting and indicating visually and acoustically the presence of an unacceptable pressure condition such as the underinflation of an automobile tire. The device when used on an automobile wheel is symmetrical about the axis of the wheel to assure proper wheel balance. A permanent magnet is

moved in response to fluid pressure in such a way that when an unacceptable pressure condition is sensed, a steel indicator ball is released from a normal visible position to provide an indication of an unsafe tire inflation



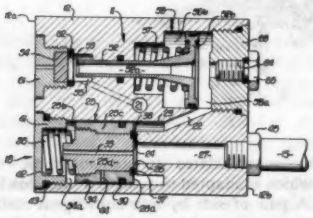
level. The ball in its released condition, causes a rattling or other audible signal to provide warning to the vehicle operator if the condition occurs while the vehicle is moving.

3,719,160

AUDIO RESERVE ALARM MECHANISM FOR SELF-CONTAINED BREATHING APPARATUS

Raymond A. Christianson, Inglewood, Calif., assignor to Under Sea Industries, Inc., Compton, Calif.

Filed March 1, 1971, Ser. No. 122,594
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **30 Claims**



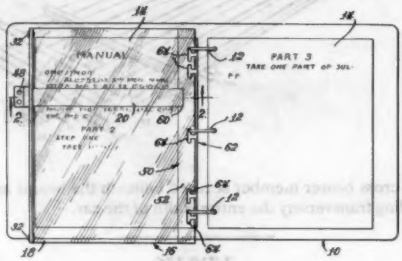
An audio alarm mechanism warns a diver using a self-contained underwater breathing apparatus (scuba) that the air tank pressure has dropped to reserve level. The mechanism includes an oscillator piston having one end which cooperates with an annular seat to gate air flow between the scuba first and second stage regulators. When the air tank pressure is sufficiently high, a stem spaces the piston away from the seat to allow unimpeded air flow to the mouthpiece and to prevent oscillation of the piston. When the tank pressure drops, the stem retracts, permitting oscillation of the piston at an audio frequency. Oscillation is sustained by feedback of the outlet pressure via a passageway to an actuating chamber at the other end of the piston. The resultant acoustic vibrations are transmitted both through the air supply hose and through the water to warn the diver to begin his ascent.

3,719,161

LINE GUIDE DEVICE

John Wegner, Des Plaines, Ill., assignor to Edanbob Corporation, Chicago, Ill.

Filed Dec. 3, 1971, Ser. No. 204,536
Int. Cl. B42d *9/00*
U.S. Cl. 116—119 **14 Claims**



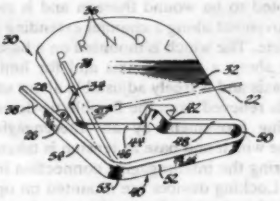
A line guide device designed to be used with a ring binder and having a flexible transparent flat sheet that is laid over a printed page in the ring binder. An elongated metallic strip is attached to one side margin of the transparent sheet in a perpendicular relationship. A line guide bar has a magnet member secured to one end in a perpendicular relation, and the magnet member by magnetic attraction holds the line guide bar to the metallic strip as the line guide is shifted up or down on the transparent sheet.

3,719,162

SHIFT INDICATOR MECHANISM

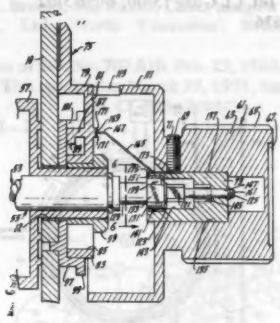
Donald M. Herod, Davison, Mich., and Barry E. English, Luton, England, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 26, 1970, Ser. No. 83,780
Int. Cl. G09f *9/00*
U.S. Cl. 116—124 **6 Claims**



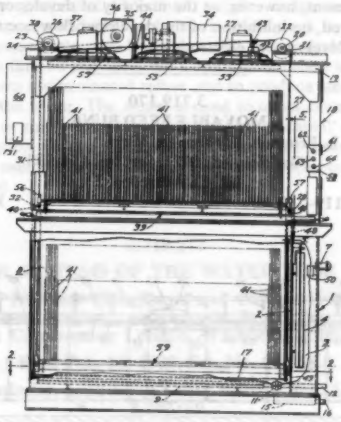
A one-piece shift indicator mechanism for an automotive instrument panel including a base member having a plurality of shift selector symbols formed thereon, a fixed abutment member formed on the base member adjacent an edge thereof, a shaped flexible spring member extending in a predetermined path from the fixed abutment member and terminating in a pointer, a stop member formed on the base member adjacent an edge thereof, the pointer being manually positionable against the stop member and movable to a position adjacent any one of the plurality of shift selector symbols in response to manually-actuated movement of the flexible spring member against the spring force thereof via a cable connected thereto from the conventional shift tube, the shaped flexible spring member having a plurality of bend portions formed therein so that the pointer may be moved relative to the abutment member, to cause the end of the pointer to follow a path which is symmetrical about the midpoint of the shift selector symbols.

3,719,163
CONTROL KNOB FOR MULTITURN ROTARY SWITCH
Leo Jedynak, and Vladas Gusaras, both of Madison, Wis., assignors to Oak Electro/Netics Corp., Crystal Lake, Ill.
Filed Nov. 5, 1971, Ser. No. 196,023
Int. Cl. G09f *9/00*
U.S. Cl. 116—133 18 Claims



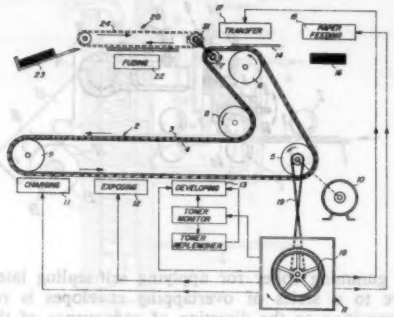
A control knob for use with a multiturn rotary switch in which means are provided for moving an indicating member radially of the switch shaft to show switch positions over several turns of the shaft.

3,719,164
DIP COATING APPARATUS INCLUDING FLUID DOCTOR MEANS
George E. Hoffman, Media, and John D. Tench, Springfield, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.
Continuation of Ser. No. 826,431, May 21, 1969, abandoned. This application May 10, 1971, Ser. No. 141,941
Int. Cl. B05c *11/06*
U.S. Cl. 118—6 4 Claims



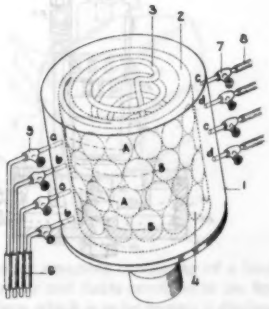
In the coating of sheet articles such as corrugated cardboard container blanks by immersing the articles in a bath of molten coating material, air is blown over the articles while they are being withdrawn from the bath, the air flow being in the same direction as the flow of coating material as it drains from the articles. Means correlate article immersion and actuation of the air flow.

3,719,165
TUNER CONCENTRATION CONTROL APPARATUS
William Trachienberg, and Theodore H. Morse, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 3, 1971, Ser. No. 177,600
Int. Cl. B05c *11/00*; G03g *13/00*
U.S. Cl. 118—7 4 Claims



An apparatus adapted for use in an electrographic magnetic brush development station for maintaining the concentration of toner in the developer mixture at a substantially constant level. Toner concentration is monitored by sampling the self-biasing potential generated by the brush as it periodically contacts uncharged areas of the electrographic recording element. Such potential has been found to be inversely proportional to the concentration of toner in the developer mixture.

3,719,166
COATING APPARATUS
Reinhard Gereth, Heilbronn, Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany
Filed Dec. 10, 1970, Ser. No. 96,903
Claims priority, application Germany, Dec. 17, 1969, P 19 63 207.6
Int. Cl. C23g *13/08*
U.S. Cl. 118—48 6 Claims



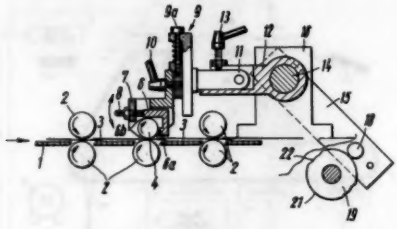
Vapor deposition apparatus includes a coating chamber having a plurality of vertically, aligned gas inlet means each one of which is diametrically opposed to an exhaust means. Each aligned inlet and exhaust means pair is aligned with a separate row of semi-conductor substrates supported on a vertically extending, rotatable susceptor.

3,719,167

DEVICE FOR APPLYING ADHESIVE TO ENVELOPES, BAGS OR THE LIKE

Bruno Pahlitzsch, Gneisenaustrasse 67, Berlin, Germany

Filed July 9, 1970, Ser. No. 53,554
Claims priority, application Germany, July 17, 1969, P 19 37 081.1
Int. Cl. B05c *1/02*
U.S. Cl. 118—211 6 Claims



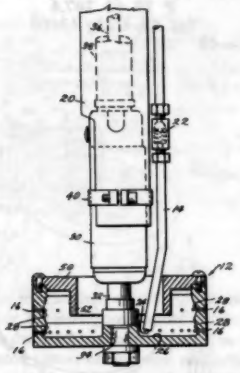
A gumming roller for applying self-sealing latex adhesive to a series of overlapping envelopes is rotated in opposition to the direction of conveyance of the envelopes so that all or nearly all of the adhesive is wiped off the roller onto their exposed flaps. The roller is cyclically lifted, together with an associated adhesive reservoir off the envelopes to produce two separate bands of adhesive on each envelope, one band on the flap and another band on the body of the envelope.

3,719,168

SYSTEM FOR APPLYING UNIFORM LAYER OF A FLOWABLE MATERIAL TO A SUBSTRATE

Robert B. Kazee, Bellaire, Tex., assignor to Kadale Equipment Company, Houston, Tex.

Filed March 22, 1971, Ser. No. 126,456
Int. Cl. B05c *7/02*
U.S. Cl. 118—306 9 Claims



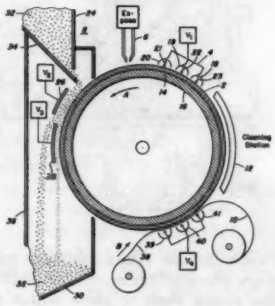
A system for dispensing and applying a uniform layer of liquid or flowable material is described. The system includes a distributor unit from which droplets of the material can be propelled by centrifugal force, and means are provided for spinning the distributor unit at relatively high rpms. The distributor unit includes a cylindrical chamber into which flowable material is received for distribution therefrom, and the cylindrical chamber is provided with annular channels associated with spaced rows of openings which penetrate the wall of the cylindrical chamber. The system is especially useful for coating lining compounds or interior surfaces of pipes.

3,719,169

PLURAL ELECTRODE DEVELOPMENT APPARATUS

Ronald L. Cade, Fairport, and John F. Knapp, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 7, 1971, Ser. No. 141,240
Int. Cl. G03g *13/00*; B05b *5/02*
U.S. Cl. 118—636 5 Claims



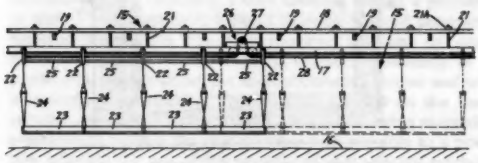
Development electrode apparatus is provided in accordance with the teachings of the present invention wherein at least two development electrodes are employed at a developing station in electrophotographic apparatus. The first development electrode presented to a latent electrostatic image undergoing development displays characteristics which are optimum for high rates of developer flow and hence only reduced development of portions of a latent electrostatic image exhibiting low charge densities and extended areas is achieved but may be accompanied by optimum cleaning. The second development electrode presented to the latent electrostatic image to be developed displays characteristics which are optimized to complete low contrast and extended area development; however, as the majority of developer material is removed, no inhibition of the developer flow occurs at said second development electrode.

3,719,170

MOVABLE FEED BUNK

Maurice L. Peterson, Kerkhoven, Minn.

Filed Feb. 18, 1971, Ser. No. 116,538
Int. Cl. A01k *05/02*
U.S. Cl. 119—52 AF 14 Claims



An animal and poultry feeding apparatus having feed bunks movably suspended from an overhead rail. A plurality of spaced U-shaped hangers, longitudinally spaced from each other with rigid struts, support upright suspension members connected to the ends of the feed bunks. The suspension

members each have a flexible cable and a winch so that the elevation of the feed bunks can be changed. An elongated chain supported on the hangers and connected to the end hangers is trained over a motor driven wheel. Rotation of the wheel moves the chain pulling the end hangers toward the wheel, thereby moving the feed bunks along the rail.

3,719,171

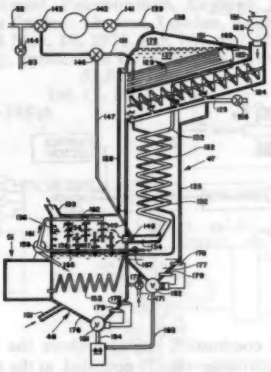
BURNER FOR COMBUSTIBLE MATERIAL

Frederick J. Brooks, San Rafael, Calif., assignor to Astrotronic Research, Ltd., North Vancouver, British Columbia, Canada

Division of Ser. No. 707,810, Feb. 23, 1968, Pat. No. 3,597,308. This application March 29, 1971, Ser. No. 128,990

Int. Cl. F23g *7/00*

U.S. Cl. 122—2 **6 Claims**



Refuse is immersed and agitated in water in a tank to segregate components by specific gravity. Light and heavy components are separately removed from the tank and separately processed. Medium weight components are primarily paper and fiber pulp stock. Such stock is purified, then processed into pulp board in a mill. Water drained from the mill is filtered and recycled. Combustible refuse is used as fuel to burn contaminated refuse and to produce steam from some of the water. The steam is used to clean certain components, to purify pulp stock, and to form "potable" water by condensation. Sludge settling from the tank, the filter and the burner is used for fertilizer. Many other useful by-products are recovered.

3,719,172

BOILER SYSTEMS OF THE WATER TUBE TYPE

Anthreas Nicholas Charcharos and Clifford Williamson, Whetstone, England, assignors to British Nuclear Design & Construction Limited, Whetstone, England

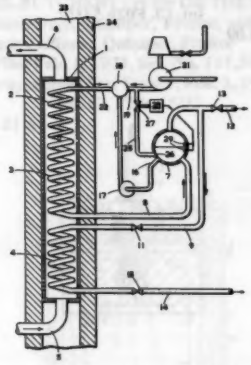
Filed Feb. 13, 1970, Ser. No. 11,056

Claims priority, application Great Britain, Feb. 14, 1969, 8,202/69

Int. Cl. F22b *1/18*

U.S. Cl. 122—7 R **3 Claims**

A boiler system includes economiser, evaporator and superheater water/steam tube sections **2**, **3**, **4** disposed within a casing **1**, the economiser and evaporator tube sections **2**, **3** being connected together in series inside the casing. The high temperature end of the evaporator section **3** is connected to a steam drum **7** disposed outside the casing, and the top of the steam drum is connected to the low temperature end of the superheater section **4**. Provision is made for the recirculation of water from the steam drum to the low temperature end of the economiser section **2** by way of a recirculating pump **17**. A further



connection **25**, controlled by a valve **27**, may be provided between the steam drum **7** and a boiler feed line **19** for assisting the maintenance of the water level in the steam drum. For use with a nuclear reactor the casing may be adapted to be disposed in a pod **23** defined within the thickness of a wall **24** of the reactor pressure vessel.

3,719,173

HEAT EXCHANGING APPARATUS

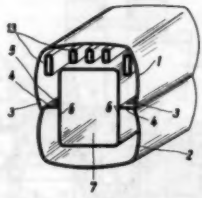
Hans Viessmann, Im Hain, 3559 Battenberg/Eder, Germany

Filed Oct. 12, 1971, Ser. No. 188,072

Claims priority, application Germany, Feb. 9, 1971, P 21 05 989.2

Int. Cl. F22b *7/12*

U.S. Cl. 122—149 **5 Claims**



A heat exchanger assembly consisting of a housing and a combustion chamber and ducts provided in the housing for a fluid or gas medium which is to be heated is disclosed. The assembly consists of a central combustion chamber, and two or more arcuately-shaped shell sections enclosing the central combustion chamber and defining the ducts. One of the shell sections has inwardly directed flanges secured to walls of the central combustion chamber with edges of the remaining shell sections being secured to walls of the other of the shell sections, and the flanges are provided with apertures to provide communication between the ducts formed.

3,719,174

ROTARY PISTON INTERNAL COMBUSTION ENGINE, ESPECIALLY OF TROCHOIDAL CONSTRUCTION

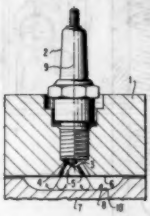
Heinz Lamm, Esslingen-St. Bernhardt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Feb. 13, 1970, Ser. No. 11,154

Claims priority, application Germany, Feb. 15, 1969, P 19 07 747.5

Int. Cl. F02b *53/12*

U.S. Cl. 123—8.09 **19 Claims**



A rotary piston internal combustion engine, especially of trochoidal construction, in which a spark plug, mounted in the engine casing, projects with its electrodes into a plug chamber which in turn, is in communication with the combustion chamber, whereby the communication is formed by two firing channels that terminate in the combustion chamber offset in the direction of the longitudinal axis of the engine.

3,719,175

LIQUID COOLING SYSTEM FOR EXHAUST VALVES OF INTERNAL COMBUSTION ENGINES

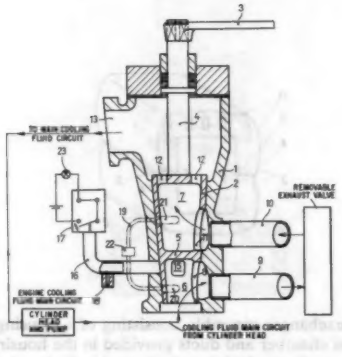
Klaus Luther, Augsburg, and Franz Schmid, Neusass, both of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg AG, Augsburg, Germany

Filed Aug. 10, 1971, Ser. No. 170,463

Claims priority, application Germany, Sept. 8, 1970, P 20 44 316.7

Int. Cl. F01p *11/02, 3/14*

U.S. Cl. 123—41.14 **12 Claims**


TO MAIN COOLING FLUID CIRCUIT
REMOVABLE EXHAUST VALVE
ENGINE COOLING FLUID MAIN CIRCUIT
CYLINDER HEAD AND PUMP
COOLING FLUID MAIN CIRCUIT FROM CYLINDER HEAD

The cooling liquid supply and removal ducts in the cylinder block include within the fluid circuit a separate valve shutting off communication of cooling fluid to the exhaust valve unit from the cooling fluid circuit of the engine, so that the exhaust valve seats and units can be replaced without draining cooling fluid from the engine; preferably, the high pressure and low pressure sides of the engine cooling fluid circuits are interconnected by a short circuit or bypass line which has a constriction formed therein, to which a pressure sensor can be connected, giving an alarm if there is pressure build-up, indicative of operation of the cooling fluid circuit with the valve connecting the exhaust valve cooling system of the engine being closed. The control valve itself is preferably a single unit having separated cones with flow openings therethrough.

3,719,176

ELECTRIC FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

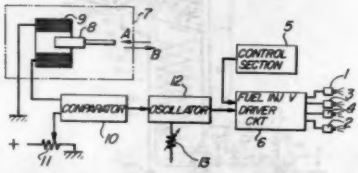
Kazuo Shinoda, Toyota, and Kunio Endo, Anjo, both of Japan, assignors to Toyota Jidosha Kogyo Kabushika Kaisha, Toyota-shi and Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, both of Japan

Filed July 10, 1970, Ser. No. 53,821

Claims priority, application Japan, July 29, 1969, 44/59801; July 29, 1969, 44/59802

Int. Cl. F02b *3/00*

U.S. Cl. 123—32 EA **1 Claim**



In internal combustion engines, where the fuel injection valves are electromagnetically operated, at the time of engine acceleration the amount of fuel injected is increased by converting sudden changes in such parameters as the negative pressure in the engine intake manifold into corresponding changes of the mechanical type, such as by the displacement of a diaphragm, according to which mechanical changes an electric fuel injection control is operated. Thus, a delay time is involved, resulting in an insufficient response characteristic. In the specification, there is disclosed an electric fuel injection system for internal combustion engines, comprising; a means to generate electric signals corresponding to the speed of motion of the throttle of the engine or particularly when the speed of the throttle motion exceeds a predetermined value; and a means to increase the amount of fuel delivered for acceleration by so controlling fuel injection valves upon reception of the signal from the first means.

3,719,177

SIGNAL GENERATING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Kazuo Oishi; Hiroshi Yoshida; Noriyoshi Ando, and Tokuhiro Kurebayashi, all of Kariya, Japan, assignors to Nippondenso Co. Ltd., Kariya-shi, Aichen-ken, Japan

Filed March 17, 1971, Ser. No. 125,219

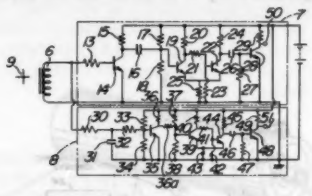
Claims priority, application Japan, March 18, 1970, 45/23256; March 27, 1970, 45/26200

Int. Cl. F02p *1/00*

U.S. Cl. 123—148 E **4 Claims**

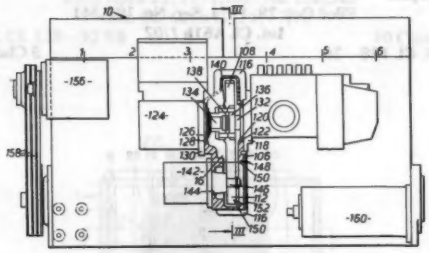
A signal generating system for use in internal combustion engines comprising a rotary pole means secured to a shaft rotating in synchronism with the engine crankshaft, said rotary pole means having a plurality of pole tips, a stationary pole means having a plurality of pole tips, a permanent magnet magnetically coupling the rotary and stationary pole means, and an induction coil to convert the rate of change of magnetic flux, which is provided by the permanent magnet, into a

corresponding voltage. Two signals of different voltage levels are derived from the induction coil, and from these signals the



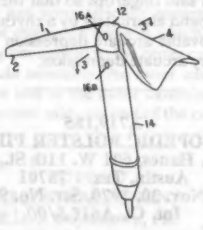
top dead center, etc., of a particular cylinder and the successive predetermined angular position of the engine crankshaft may be detected.

3,719,178
INTERNAL COMBUSTION ENGINE
William F. Stewart, Peterborough, England, assignor to Perkins Engines Limited, London, England
Filed Nov. 10, 1971, Ser. No. 197,429
Claims priority, application Great Britain, Nov. 10, 1970, 53,522/70
Int. Cl. F02f *7/00*
U.S. Cl. 123—195 A **12 Claims**



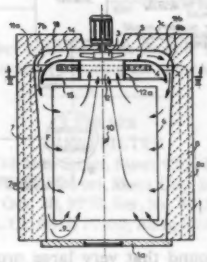
An improved internal combustion engine consists of a unitary crank case having a cavity cast at the middle of its length to house the timing drive and a drive to auxiliary equipment. The cavity has openings and the auxiliary equipment is mounted on load bearing covers which close these openings.

3,719,179
ICE AXES
Hamish MacInnes, Glencoe, Scotland, assignor to Trevor Peck Climbing Equipment Limited, Leicester, England
Filed Oct. 22, 1970, Ser. No. 83,078
Int. Cl. B28d *1/26*
U.S. Cl. 125—36 **4 Claims**



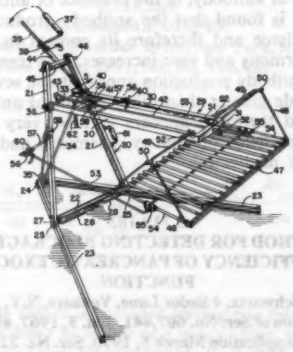
An ice axe has a pick part, a rear part projecting in the opposite direction from the pick part and a crown part constituting a head assembly. The head assembly presents a shank which is fitted into a hollow shaft part. The rear part may be formed as an adze or as a hammer head. When formed as an adze it is made from metal plate curved to shape.

3,719,180
DEVICE FOR HEAT TREATMENT BY WAY OF FORCED GAS CONVECTION, FORMING A BAKERY, PASTRY, PORK-BUTCHERY OVEN OR THE LIKE
Francois Caillarec Pere, Quimper, France, assignor to Capic-Etablissements Caillarec, Quimper, France
Filed Feb. 1, 1971, Ser. No. 111,241
Claims priority, application France, Feb. 2, 1970, 7003575
Int. Cl. F24c *15/32*
U.S. Cl. 126—21 A **7 Claims**



A device for heat treatment comprising a muffle, heating means, a fan and a treatment chamber limited on one of its sides by an inner wall of the muffle, the cross-sections of said chamber having the shape of trapezia, the larger base of which is located on the fan side of the device. The heating means are constituted by at least one gas burner. The device comprises a casing forming a heat exchanging element surrounding said heating means and being placed within the hot gases circulating in the muffle.

3,719,181
ADJUSTABLE AND FOLDING OUTDOOR GRILL AND CRANE
James E. Porter, Jr., Rte. 1, P.O. Box 214A, Lexington, S.C. 29072
Filed Aug. 31, 1971, Ser. No. 176,601
Int. Cl. F24b *3/00*
U.S. Cl. 126—30 **12 Claims**



A foldable crane for outdoor cooking is adjustable for supporting a grill rack or kettle at desired elevations above a fire or charcoal bed. The grill rack will remain

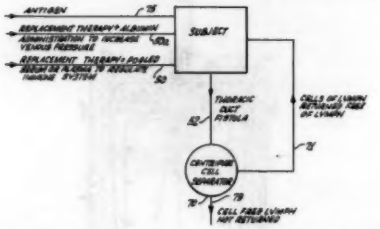
level in all elevations due to the action of supporting and stabilizing means. The device is stable and solid when set up on the ground for usage and folds into a very compact essentially flat carrying or storing assembly.

3,719,182

AUGMENTATION OF THE PRODUCTION OF ANTIBODIES IN ANIMALS AND HUMANS AND THE COLLECTION THEREOF

Samuel Rose, La Jolla, Calif., assignor to Bio-Response, Inc., New York, N.Y.

Filed Apr. 22, 1971, Ser. No. 136,476
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R **19 Claims**



It has been found that very large production of antibodies can be achieved by removing specific feedback regulatory antibodies by means of a lymphoresis performed under special conditions in a patient or subject (e.g., an animal or human) with induced anatomical and physiological changes.

The subject is first given antigen administration then, preferably, but not mandatorily, is splenectomized. A thoracic duct fistula is next performed. The central venous system pressure is then preferably raised so that it is above the atmospheric pressure of the thoracic duct. In this manner, substantially all the lympth fluid is allowed to flow out of the thoracic duct from the fistula (through an indwelling catheter) for a prolonged period of time. The lymph is separated into cells and lymph fluid. The cells are returned to the subject intravenously. The subject must be given replacement fluid, which can be of several kinds, but all lacking the specific antibody.

By virtue of the above procedure, the plasma and extracellular fluid of the subject is continuously depleted of feedback antibody because the antibody is continuously removed prior to its reaching the blood stream. Because of this lack of antibody, in the presence of antigen administration, it is found that the antibody production in the lymphoid tissue and therefore its content in the lymph fluid is enormous and ever-increases. The tremendous increase in antibody production appears to be several orders of magnitude greater than other modes of antibody production and therefore appears to have very substantial utility in the fields of biology, chemistry and veterinary and clinical medicine.

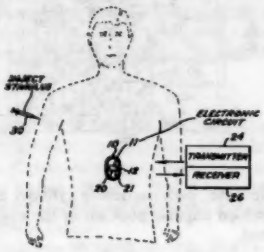
3,719,183

METHOD FOR DETECTING BLOCKAGE OR INSUFFICIENCY OF PANCREATIC EXOCRINE FUNCTION

Howard S. Schwartz, 4 Sador Lane, Yonkers, N.Y.

Continuation of Ser. No. 607,441, Jan. 5, 1967, abandoned. This application March 5, 1970, Ser. No. 22,107
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 R **7 Claims**

A process for determining internal blockage to pancreatic enzyme flow in which an electronic capsule transponder has an insulative coating of material dissolvable by the action of predetermined enzyme secretions. When the coating is dissolved, the transponder is coated with the enzyme flow. The transponder may be swallowed and a stimulant may be applied to the body to selectively increase enzyme secretions.

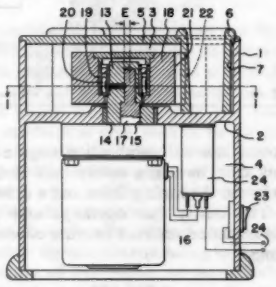


3,719,184

MACHINE FOR RELIEVING THE FATIGUE OF FINGERS

Tadashi Kobayashi, 1560-2 Higashihara, Tenma, Shizuoka, Japan

Filed Oct. 28, 1971, Ser. No. 193,341
Int. Cl. A61h *1/02*
U.S. Cl. 128—26 **5 Claims**



A machine for relieving the fatigue of fingers comprising a casing with an inner wall, a plurality of elastic fingertips disposed in a somewhat arcuate path along said inner wall, a stationary arcuate depression section along said inner wall, and a movable arcuate pressure member in said casing disposed to act on said fingertips so that they are compressed and allowed to expand alternately by a rhythmic reciprocating motion of said movable arcuate depression toward and away from said stationary arcuate depression.

3,719,185

ORTHOPEDIC BOLSTER PILLOW

Clifford D. Hanes, 601 W. 11th St., Apt. 122, Austin, Tex. 78701

Filed Nov. 30, 1970, Ser. No. 93,657
Int. Cl. A61f *5/00*
U.S. Cl. 128—69 **3 Claims**

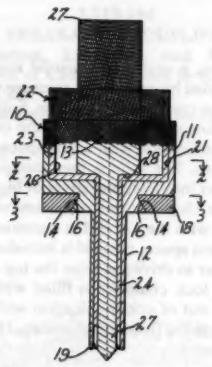
A small cylindrical-shaped bolster type pillow provided with a semi-flexible tubular core surrounded by a layer of padding material and an outer cover end proportion

to supply pressure and support to the atlas vertebra when laid parallel to the neck of a person sleeping on one side with said pillow of such length as to extend roughly from the shoulder to a position just behind the ear of the user.

3,719,186
SURGICAL INSTRUMENT FOR PLACEMENT OF BONE PINS AND HOLES THEREFOR

James J. Merig, Jr., Birmingham, Ala., assignor to University of Alabama in Birmingham, Birmingham, Ala.

Filed April 22, 1971, Ser. No. 136,345
Int. Cl. A61b *17/16, 17/18*
U.S. Cl. 128—92 EB **10 Claims**



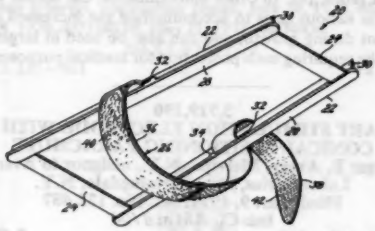
A surgical instrument for placement of bone pins and holes therefor having an outer cannula telescopically receiving an inner cannula which in turn telescopically receives a stylus. The outer cannula has symmetrically separable components and one end thereof engages a bone in which a hole is drilled. A tool is detachably connected to the outer cannula for retaining the outer cannula assembly. An inner cannula terminates inwardly of said one end of the outer cannula and a stylus extends to a point adjacent said one end of the outer cannula.

3,719,187
ADJUSTABLE SPLINT

Judson T. Ulansey, R.D. 5, Doylestown, Pa.

Filed May 13, 1971, Ser. No. 143,075
Int. Cl. A61f *5/04*
U.S. Cl. 128—90 **9 Claims**

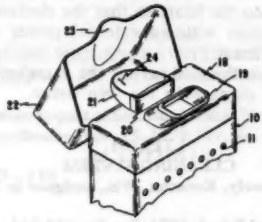
An adjustable splint comprising a pair of spaced rigid bars and a pair of semi-rigid straps connected to the ends of the bars. The straps are integrally molded with the bars. A flexible strap is secured to one of the rigid bars and passes through an opening in the other rigid bar. The flexible strap is infinitely adjustable, and is used for securing the splint in place.



3,719,188
COUGH FILTER

Frank E. Fisher, 710 26th Street, Sioux City, Iowa, and Joseph N. Fisher, 1908 Helmer Street, Sioux City, Iowa

Filed Oct. 20, 1970, Ser. No. 82,370
Int. Cl. A61b *19/00;* **A61g** *9/00*
U.S. Cl. 128—275 **2 Claims**

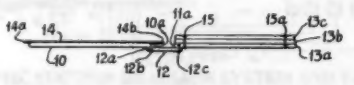


A filter for prevention of transmission of air-borne disease including a perforated container. A mouthpiece is provided into which the user coughs. Filter material in the container filters out most of the microorganisms which would transmit disease. A cover is provided to protect the mouthpiece.

3,719,189
RE-USEABLE DIAPER

Paul L. Sherman, 230 Riverside Drive, New York, N.Y.

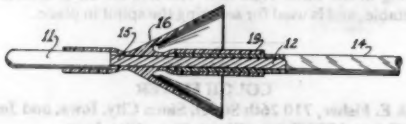
Filed Oct. 6, 1971, Ser. No. 186,988
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **10 Claims**



A re-useable diaper is provided having two fabric panels joined to each other by means of a non-wicking, waterproof web, said panels being superimposable by folding along said web to orient the same as an inner, body contacting panel and an outer or visible panel, and moistureproof film means disposed between said superimposed panels and extending to said web to prevent moisture accumulated in said inner panel from reaching said outer panel. This assemblage permits the

diaper to be used without the need of an outer protective garment such as "rubber pants", since the non-wicking web and the moistureproof overlay prevent moisture from being transmitted from the fabric ply placed against an infant to the outermost fabric ply. In other embodiments, the diaper can be folded in various sizes to accommodate the increased size of an infant during growth, and can also be used in larger sizes for adults requiring such protection for medical purposes.

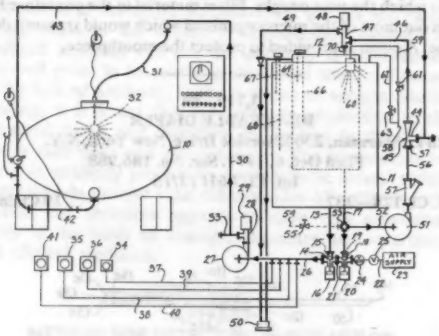
3,719,190
HEART STIMULATION ELECTRODE WITH A CONICAL POSITIONING PARACHUTE
Roger E. Avery, Melville, N.Y., assignor to Avery Laboratories, Inc., Farmingdale, N.Y.
Filed Mar. 9, 1971, Ser. No. 122,457
Int. Cl. A61m 1/04
U.S. Cl. 128—418 **5 Claims**



A flexible electrode is provided with a conical parachute which permits the blood flowing in a vein to draw the electrode into the heart so that the electrode may be used in connection with an external power source for stimulating the heart.

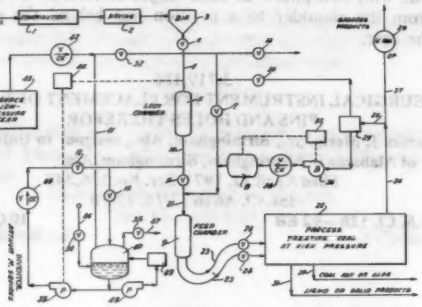
A light pull on the lead inverts the parachute for withdrawal without damage to the vein tissue.

3,719,191
CLEANING SYSTEM
Robert D. Zimmerly, Kenosha, Wis., assignor to Ladish Co., Cudahy, Wis.
Filed Feb. 4, 1971, Ser. No. 112,744
Int. Cl. B08b 9/08, 3/02
U.S. Cl. 134—102 **10 Claims**



A single service cleaning system utilizes a motive tank within a rinse water tank. Pipe lines interconnect the tanks with each other and with the tank or product-pipeline to be cleaned, a supply pump being used to pump liquid under control of a burst valve to the tank lines to be cleaned, with a motive pump pumping motive fluid from the motive tank through an eductor to draw returned liquid from the tank to be cleaned for return into the motive tank and/or for discharge through a drain line. Steam may be admitted to the system prior to the liquid entering both pumps for raising the temperature of the water in the system. Chemicals may be selectively introduced into the feed line leading to the tank or product-pipeline to be cleaned and various valves control the flow for different cleaning cycles. There is also an air supply for blowing liquid out to evacuate the feed line.

3,719,192
METHOD AND APPARATUS FOR TRANSFERRING A COMMINUTED SOLID FROM A LOW PRESSURE INTO A SPACE OCCUPIED BY GAS AT HIGH PRESSURE
Arthur M. Squires, 245 West 104th Street, New York, N.Y.
Filed July 30, 1971, Ser. No. 167,687
Int. Cl. B65g 53/00
U.S. Cl. 137—1 **15 Claims**

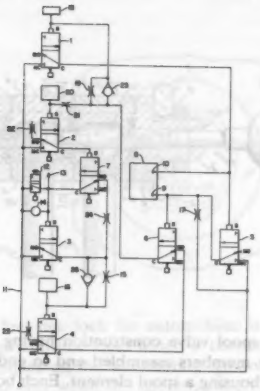


By the invention, a comminuted solid may be introduced into a space occupied by gas at high pressure with little expenditure of energy for compression of a gas. Solid is charged to a lock chamber at low pressure, and the top of the chamber is placed into communication with a first space filled with a gas at the high pressure. The solid is then dumped from the bottom of the chamber into a second space at high pressure. With the bottom of the chamber out of communication with this second space, but with the top still in communication with the aforementioned first space, a liquid is introduced into the bottom of the chamber to drive gas from the top and into the first space. When the lock chamber is filled with the liquid, the chamber is taken out of communication with the first space, and the liquid is drained from the chamber. The liquid may advantageously be water.

3,719,193
PNEUMATIC CONTROL SYSTEM FOR VIBRATION DETECTOR
Donald A. Doyle, P.O. Box 3775, Santa Ana, Calif.
Continuation-in-part of Ser. No. 93,053, Nov. 27, 1970. This application Dec. 9, 1971, Ser. No. 206,247
Int. Cl. G05b 9/00
U.S. Cl. 137—38 **16 Claims**

A pneumatically operated control system for use with a pneumatically operated vibration detector serves to discriminate between false transient conditions and conditions due to excessive vibration forces. The control system uses a number of similar diverter valves connected to provide the desired control functions. A start delay is provided to eliminate operation of the system in response to any vibration forces normally encountered during the starting period. A vibration condition occurring after the start delay causes the vibration detector to be tripped to provide a signal to two diverter valves, each of which has a pneumatic delay. Operation of one of the diverter valves causes the vibration detector

to be reset. If the vibration condition continues the vibration detector is repeatedly tripped and reset until the delay for the other diverter valve is overcome to cause it to operate to provide a signal for terminating the operation of the control



system and the equipment being protected. A visual indication of the status of the control system is provided. The system is also usable for monitoring more than one vibration detector. In such applications, a visual indicator is used to indicate the status of each vibration detector.

3,719,194

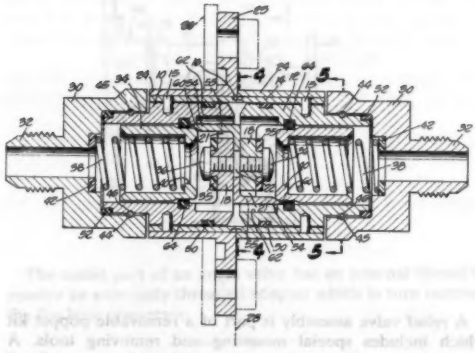
BREAKAWAY COUPLING

Dean M. Anderson, Lakewood, and Ross E. Burbick, Bellflower, both of Calif., assignors to E. B. Wiggens, Inc., Los Angeles, Calif.

Filed Sept. 23, 1971, Ser. No. 183,065

Int. Cl. F16k *17/40*

U.S. Cl. 137—68 **18 Claims**



A breakaway coupling has two confronting bodies, each equipped with a spring-loaded valve that is normally held open by a trigger that releases in response to slight separation movement of the two bodies. The two bodies are united by a frangible sleeve that is anchored to the two bodies respectively by frangible pins. The pins yield to purely axial separation force between the two bodies and the sleeve yields to shear and bending forces.

3,719,195

FLUIDIC PULSE COUNTER

Yasumasa Matsuda, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed July 27, 1971, Ser. No. 166,472

Claims priority, application Japan, July 30, 1970, 45/66077; Dec. 28, 1970, 45/120139; May 21, 1971, 46/34036

Int. Cl. F15c *1/12*

U.S. Cl. 137—811 **12 Claims**

In a bistable pure fluidic element there are provided a first circulation passage having an input pulse source in communication with two control nozzles, a second circulation passage connecting said input pulse source with one point of each of two output flow passages and a third circulation passage formed in the proximity of a main jet dividing or diverting edge so as to branch at leat one portion of a main jet of the element. Associated circuits are also disclosed.

3,719,196

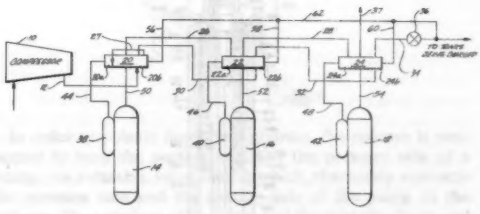
CHARGING SEQUENCE SYSTEM AND PROCESS

Robert W. McJones, 529 Via Del Monte, Palos Verdes Estates, Calif.

Continuation-in-part of Ser. No. 34,966, May 6, 1970. This application Nov. 25, 1970, Ser. No. 92,814

Int. Cl. F17d *1/02*

U.S. Cl. 137—110 **11 Claims**



Each container in a bank of containers is individually charged with a gas in the order of the highest residual pressure remaining in the containers at the time charging is initiated. Gas withdrawal from the containers begins with the container at the lowest beginning pressure.

3,719,197

ASEPTIC SUCTION DRAINAGE SYSTEM AND VALVE THEREFOR

Karl A. Pannier, Jr.; Gordon S. Reynolds, and James L. Sorenson, all of Salt Lake City, Utah, assignors to Le Voys, Inc., Salt Lake City, Utah

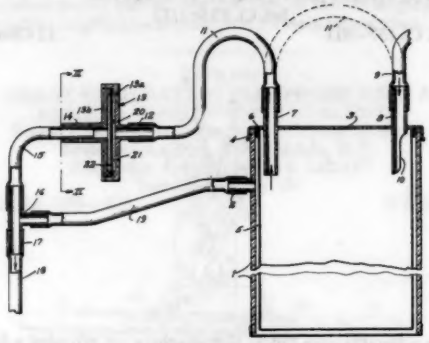
Filed March 4, 1971, Ser. No. 120,986

Int. Cl. A61m *1/00*

U.S. Cl. 137—205 **5 Claims**

An aseptic suction drainage system and valve therefor, embodying a drainage receiver for receiving drainage from the body of a patient after wounding of or surgery performed on

the patient which, after filling to a desired extent, may be sealed so that the receiver along with its drainage contents is disposable as a unit. A foolproof valve is incorporated in the system to prevent contaminated drainage from entering the



suction or vacuum system of a hospital regardless of carelessness or neglect of an attendant as to how full the drainage receiver may become, the valve automatically protecting the main vacuum system of a hospital from contamination.

3,719,198

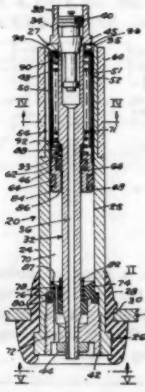
PRESSURE INDICATOR FOR PNEUMATIC TIRE

Arthur L. Wilhelm, 11375 Fourteen Mile Road, Sterling Heights, Mich.; Leonard M. Wilhelm, 6700 Bloomfield Lane, Birmingham, Mich., and Lawrence L. Wilhelm, 15138 Adams Drive, Warren, Mich.

Filed Jan. 11, 1971, Ser. No. 105,415

Int. Cl. F16k *37/00*

U.S. Cl. 137—228 **4 Claims**



An air pressure indicator device for permanent installation on a pneumatic tire. The device has a main housing with a cylindrical chamber and a piston with associated seals slideably received therein. Air under pressure in the tire acts on and displaces the piston against the bias of a calibrated spring to provide an indication of air pressure. At opposite ends of its stroke the piston engages seals to prevent an over inflated or under inflated tire from being deflated by failure of seals associated with the piston. In one modification of this pressure indicator a stem is also included for inflating the tire.

3,719,199

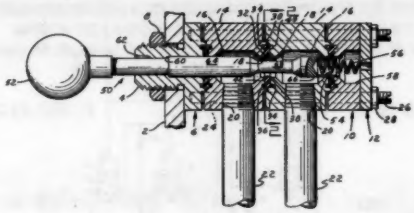
SPOOL VALVE CONSTRUCTION OF MODULAR PARTS

John P. Mentink, Longmeadow, Mass., assignor to Hydromation Systems, Inc., Westfield, Mass.

Filed Oct. 1, 1971, Ser. No. 185,530

Int. Cl. F16k *11/00*

U.S. Cl. 137—269 **6 Claims**



A modular spool valve construction having a plurality of identical body members assembled end to end between cap members and housing a spool element. Each body member is formed with a longitudinal passage having aligned spool seating portions at each end thereof and a central chamber, the latter having a lateral passage between the chamber and an outside wall surface for conduit connection. The end faces of the members are provided with complementary surfaces formed with aligned means concentrically of the spool seating portions for a piloted nesting together of a series of body members and a pocketing between adjacent members of a flexible ring seal. Longitudinal tiebolt corner openings are spaced at 90° for selecting the lateral direction of the connector passage of each chamber in assembling the parts.

3,719,200

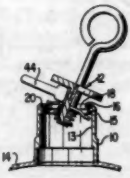
VACUUM PUMPOUT AND PRESSURE RELIEF VALVE

James W. Draper, Morro Bay, and Lowell N. Edwards, Los Osos, both of Calif., assignors to Cryogenic Engineering Company, Denver, Colo.

Filed Feb. 25, 1971, Ser. No. 118,813

Int. Cl. F16k *43/00*

U.S. Cl. 137—315 **19 Claims**



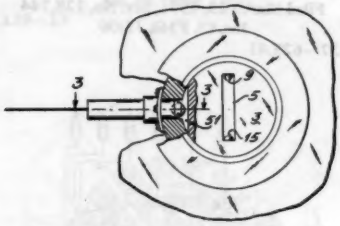
A relief valve assembly is part of a removable poppet kit which includes special mounting and removing tools. A removable-poppet assembly is compatible with a conventional operator and comprises a poppet and a Z-bar biased toward one another by a spring along a plunger. The removable-poppet assembly is mounted on a valve housing by clamping an axial shoulder of the valve housing between the poppet and the Z-bar. The tools include means for manually separating the poppet from the Z-bar, and a T-shaped tool for holding the poppet and Z-bar in a separated configuration so that the removable-poppet assembly can be removed or mounted.

3,719,201

AUTOMOBILE ELECTRICAL SYSTEM

Ivan G. Minks, 5617 Weimering Drive, St. Louis, Mo., and Melvin P. Minks, 1950 Cherokee Street, St. Louis, Mo.

Filed March 12, 1971, Ser. No. 123,606
Int. Cl. B60r *25/04;* **F16k** *35/06;* **H01h** *9/28*
U.S. Cl. 137—351 **3 Claims**



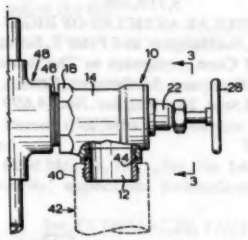
An electric fuel line lock for automobiles is opened by a solenoid, the ground line from which is connected to a normally open contact on the automobile ignition switch lock which is closed only when the ignition switch lock is in the "on" position, so that when the ignition switch lock is in the "off" position the fuel line is locked and the automobile cannot be operated. To prevent unauthorized operation of the ignition switch, the ignition switch includes an extra tumbler engageable with a notch or groove in a surface of the key other than the normal tumbler engaging edge of the key.

3,719,202

ANGLE VALVE

James Fitzpatrick, Toronto, Ontario, Canada, assignor to Dyer and Miller Bros., Ltd., Weston, Ontario, Canada

Filed March 1, 1971, Ser. No. 119,683
Int. Cl. F16l *5/00*
U.S. Cl. 137—360 **1 Claim**



The outlet part of an angle valve has an internal thread to receive an externally threaded adapter which in turn receives the fire hose connector.

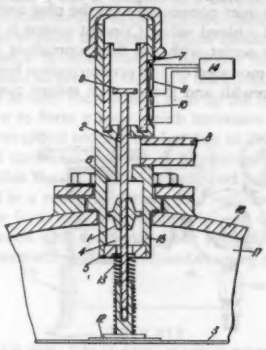
3,719,203

SAFETY VALVE FOR OIL FILLED CABLE

Gunnar Wettre, 1370 Asker, Norway, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 13, 1971, Ser. No. 188,881
Int. Cl. F16k *37/00*
U.S. Cl. 137—554 **5 Claims**

Oil pressure in oil filled cables is sensed and controlled by a valve arrangement which prevents damage to the oil pressure tank. Expansion or contraction of a pressure cell with the outflow or inflow of oil moves a piston against upper or lower



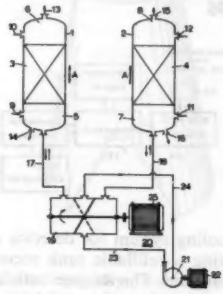
valve seats to stop oil flow. A magnet on one end of the piston actuates upper and lower reed relays to set off a detector or alarm device at predetermined limits.

3,719,204

DEVICE FOR PULSATING A LIQUID IN A COMUMN

Freerk J. Fontein, Heerlen; Martinus Ploeg, Brunssum, and Jacques Van Linden, Stein, all of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed Sept. 29, 1971, Ser. No. 184,815
Claims priority, application Netherlands, Sept. 29, 1970, 7014268; April 10, 1971, 7104843
Int. Cl. F04d *27/02*
U.S. Cl. 137—568 **20 Claims**



In order to pulsate liquid in a column, the column is connected to both the suction side and the pressure side of a pump, via rotatable valve means which alternately connects the pressure side and the suction side of the pump to the column. The rotations of the valve and the pumping force and the flow capacity of the piping between the column and the pump primarily influence the amplitude and frequency of pulsations in the column. More than one valve may be connected to one column and more than one column can be connected to one valve. Preferred valve designs are disclosed, as are preferred fluid circuits incorporating surge tank means.

3,719,205

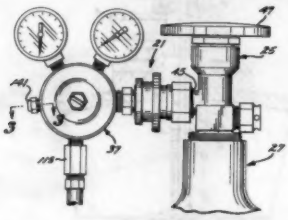
QUICK DISCONNECT PRESSURIZATION APPARATUS

Harold Ronald Harris, 17421 Canter Street, Garden Grove, Calif.

Filed Feb. 12, 1971, Ser. No. 115,010
Int. Cl. F16l *29/00;* **F16k** *45/00*
U.S. Cl. 137—583 **2 Claims**

Quick disconnect pressurization apparatus for connection with a control valve on a pressurization bottle and adapted for pressurization of a fluid container. The apparatus includes a coupling device including a female socket for connection with the pressurization bottle, a male plug telescopically received

in such female socket and quick disconnect coupling means for coupling the plug in such socket. A regulator assembly is formed with an inlet connected with the plug and includes an outlet port and a bleed valve. Conduit means is provided for connecting the outlet with the fluid container whereby the socket may be mounted on the pressurization bottle, the plug connected therewith and the conduit means connected with



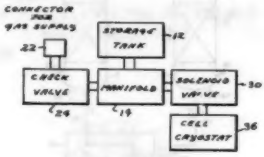
the fluid container to pressurize such container to a selected pressure. When it is desirable to disconnect the pressurization bottle from the container, the control valve on the pressurization may be closed and the bleed valve opened and the quick disconnect coupling means actuated to release the plug from the socket to thereby disconnect such plug without necessitating use of wrenches and the like.

3,719,206

REFILLABLE COOLING PACKAGE

Odle Glenn Hatcher, Panama City, Fla., assignor to the United States of America as represented by the Secretary of the Air Force

Filed Feb. 12, 1971, Ser. No. 114,855
Int. Cl. F17c *7/02*; F25b *19/00*
U.S. Cl. 137—596 **2 Claims**



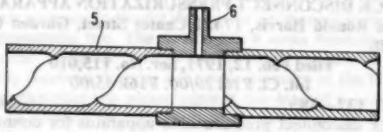
A refillable cooling system for detector cells in a guidance system having a refillable tank secured to a filling and discharge manifold. The storage tank is filled through a connector adapted to be connected to an argon supply. A check valve is provided between the connector and the manifold. An on/off solenoid valve is provided in the output line which is connected between the manifold in the detector cell cooling cryostat.

3,719,207

APPARATUS FOR TRANSPORTING FLUID

Hideo Takeda, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 13, 1970, Ser. No. 89,219
Claims priority, application Japan, Nov. 13, 1969, 44/90897
Int. Cl. F16k *19/00*
U.S. Cl. 137—604 **6 Claims**



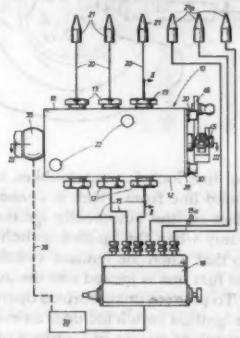
A method of and apparatus for transporting fluid wherein the fluid is transported through a pipe having a helical protrusion on the internal surface thereof which causes the fluid in the pipe to rotate about the longitudinal axis of the pipe.

3,719,208

FUEL SHUTOFF DEVICE FOR MULTICYLINDER FUEL INJECTION PUMPS

Eberhard Hofmann, Kirchberg/Murr, and Heinrich Staudt, Markgroningen-Talhausen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed March 29, 1971, Ser. No. 128,744
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.41 **1 Claim**



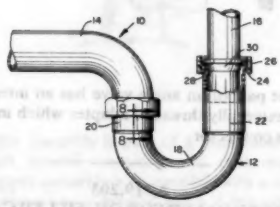
For arbitrarily cutting off the fuel supply to a fuel injection valve from a fuel injection pump during operation thereof, there is provided a fuel shutoff device through a channel of which the pressurized fuel passes. The device has a bore spaced from the channel and communicating therewith through a short-length port. Said bore communicates with a bypass conduit. A rotary valve plug disposed in the bore establishes or interrupts communication — dependent upon its angular position — between the channel and the bypass conduit.

3,719,209

ARCUATE TUBULAR ARTICLES OF RIGID PLASTIC

Clifford W. Rush, Southington, and Peter T. Schurman, Woodbridge, both of Conn., assignors to The Beaton & Corbin Manufacturing Company, Southington, Conn.

Filed Sept. 23, 1970, Ser. No. 74,699
Int. Cl. F16l *9/12*
U.S. Cl. 138—177 **6 Claims**



An improved method is disclosed for fabricating a rigid plastic tubular article having an integral arcuate portion along its tubular axis. Articles such as plumbing traps, waste bends, etc., manufactured by the method are also disclosed.

3,719,210

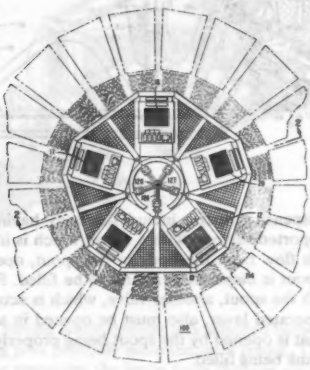
CIRCULAR WEAVING APPARATUS PRODUCT AND PROCESS

Paul D. Emerson, Raleigh; S. Jack Davis, Chapel Hill; John C. Oatfield; Fred H. Engelman, both of Cary, and Charles E. Bartee, Durham, all of N.C., assignors to Monsanto Company, St. Louis, Mo., by said Emerson, Oatfield, Engelman and Bartee

Division of Ser. No. 793,921, Dec. 31, 1968. This application Dec. 8, 1969, Ser. No. 882,387

Int. Cl. D03d *37/00*

U.S. Cl. 139—13 69 Claims



A thick-walled, integrally woven, three-dimensionally shaped fabric which is produced on a circular type weaving machine is comprised of a plurality of yarn systems each of which defines a plurality of yarn planes with the yarn planes of each yarn system being distinct and traversing selected yarn planes of the other yarn systems. The fabric is woven upon the surface of a mandrel with the resulting shape being determined by the action of Jacquard means on the yarn systems and by the three-dimensional shape of the mandrel. The resulting fabric may be woven in the shape of a cylinder, a truncated cone, or as irregular shapes, such as, an airplane wing, a boat hull or the like.

3,719,211

YARN HOLDING DEVICE FOR A PICKING ELEMENT OF A LOOM

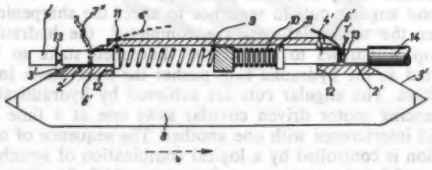
Allan W. H. Porter, C-H 9062, Lustmuehle/Arbon, Stosswald, Switzerland

Filed May 24, 1971, Ser. No. 146,165

Claims priority, application Switzerland, June 4, 1970, 8371/70

Int. Cl. D03d *47/20*, *47/24*

U.S. Cl. 139—122 N 5 Claims



A yarn gripping device on a weft-inserting element of a loom is operable to pick weft yarn from a stationary weft yarn supply arranged outside the loom. The weft-inserting element has at least one cylindrical tubular end part with a running plane surface which is inclined at the front end for the weft yarn. A cylindrical bar is located in a bore of the cylindrical end part which terminates at the inclined running surface. The bar protrudes beyond the running plane surface and there is a radial clearance between the bar and the bore on all sides which is at least as great as the yarn thickness. The weft yarn forms a loop around the bar as it runs up the inclined running plane surface to form a loop which increases as more of the weft yarn is wrapped around the bar due to the running up on the inclined surface. The bar is advantageously resiliently mounted within the cylindrical tubular end part so that it may be displaced in a radial direction. The weft-inserting element may take the form of a loom shuttle having inclined running surfaces at each end and with a bar projecting through the bore which terminates at the inclined running plane surface at each end.

3,719,212

CIRCULAR WEAVING APPARATUS PRODUCT AND PROCESS

Paul D. Emerson, Raleigh; S. Jack Davis, Chapel Hill; John C. Oakfield; Fred H. Engelman, both of Cary, and Charles E. Barter, Durham, all of N.C., assignors to Monsanto Company, St. Louis, Mo., by said Emerson, Oatfield, Engelman and Barter

Filed Dec. 31, 1968, Ser. No. 793,921

Int. Cl. D03d *3/02*

U.S. Cl. 139—387 30 Claims

A thick-walled, integrally woven, three-dimensionally shaped fabric which is produced on a circular type weaving machine is comprised of a plurality of yarn systems each of which defines a plurality of yarn planes with the yarn planes of each yarn system being distinct and traversing selected yarn planes of the other yarn systems. The fabric is woven upon the surface of a mandrel with the resulting shape being determined by the action of Jacquard means on the yarn systems and by the three-dimensional shape of the mandrel. The resulting fabric may be woven in the shape of a cylinder, a truncated cone, or as irregular shapes, such as, an airplane wing, a boat hull or the like.

3,719,213

METHOD FOR ADDING MEDICAMENTS TO A SEALED EXPANDABLE PARENTERAL FLUID CONTAINER

John L. Quick, Buffalo, Ill., assignor to Barter Laboratories, Inc., Morton Grove, Ill.

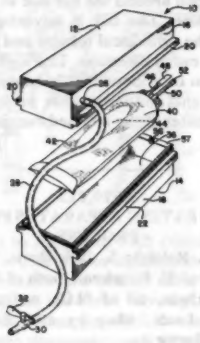
Filed March 3, 1971, Ser. No. 120,411

Int. Cl. B65b *31/00*

U.S. Cl. 141—5 3 Claims

A rigid chamber adapted to receive an expandable container such as a plastic bag of parenteral fluid contains an opening connected to a source of vacuum and an opening through which a tubular port on the container may be placed

so that it will be accessible from the exterior of the chamber to permit the connection thereto of a vial containing a material such as a medicament to be added to the bag. By selective control of the vacuum supply to the chamber and of the position of the medicament vial relative to the fluid level in the bag, it is possible to add the contents of vials containing not



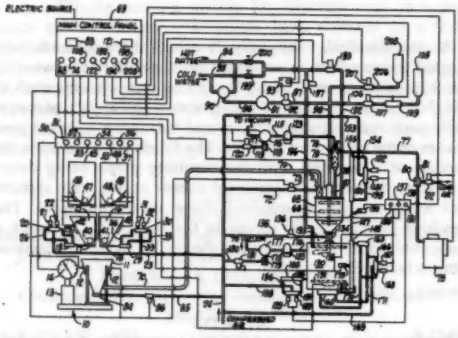
only freely flowing liquid additives but also very viscous ones as well as powdered or granular materials. The system can also be operated in such a way that the contents of a plurality of medicament vials or syringes can be added to the bag even though the volume of the material to be transfered from the plurality of medicament containers is greater than the initial free air volume in the bag.

3,719,214

INVESTING APPARATUS

Edmund E. Erndt, Timberlake, Ohio, assignor to Precision Metalsmiths Inc., Cleveland, Ohio

Filed July 9, 1970, Ser. No. 53,503
Int. Cl. B65b *31/02*
U.S. Cl. 141—51 **4 Claims**



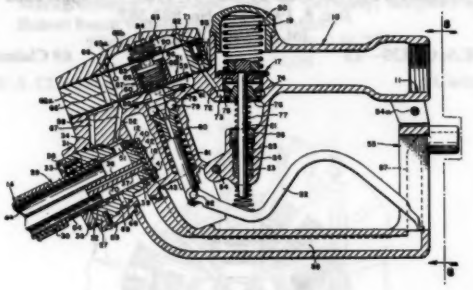
Investing apparatus including a vacuum chamber in which flasks are filled with refractory slurry, a mixing kettle adapted to be charged with the materials required to make the slurry, and equipment for measuring out and charging into the kettle predetermined amounts of the slurry materials. A system for automatically controlling the operations of the apparatus is provided.

3,719,215

SHUT-OFF VALVE FOR LIQUID DISPENSING NOZZLE

Robert L. Murray, 611 Belmont Road, Dayton, Ky.

Filed Aug. 31, 1970, Ser. No. 68,153
Int. Cl. B65b *1/04, 3/04;* **B67c** *3/34*
U.S. Cl. 141—207 **6 Claims**



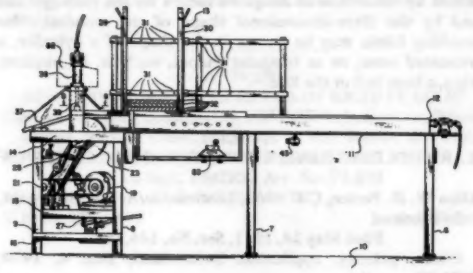
A fuel dispensing nozzle includes a body having a spout slidably supported thereon with a valve, which is in the body and controls flow from the body to the spout, opening only when the spout is disposed in a tank to be filled. For fuel to flow through the spout, another valve, which is actuated by a manually operated lever, also must be opened in addition to the valve that is opened by the spout being properly disposed within the tank being filled.

3,719,216

AUTOMATIC STAKE SHARPENING APPARATUS

Manville W. Tracy, 5750 N. 10th St., Phoenix, Ariz. 85004

Filed Sept. 22, 1971, Ser. No. 182,594
Int. Cl. B27b *5/02;* **B27m** *3/00*
U.S. Cl. 83—471.2 **5 Claims**



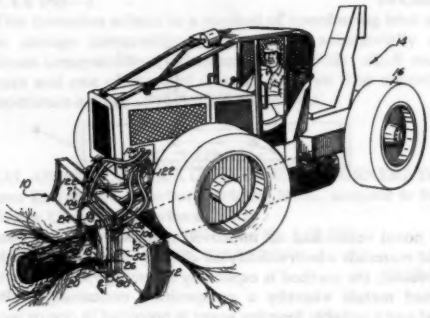
Apparatus is provided for serially advancing stake blanks from an adjustable hopper utilizing a hydraulic ram. As each stake is advanced to a sharpening position, a hydraulic clamp holds the stake while it receives first and second angular cuts in sequence to effect the sharpening. After the sequential cuts are completed, the hydraulic clamp withdraws to permit the sharpened stake to be ejected as the hydraulic ram pushes the next blank into position. The angular cuts are achieved by hydraulically advancing motor driven circular saws one at a time to avoid interference with one another. The sequence of operation is controlled by a logical combination of switches actuated by the various moving parts which function to selectively energize and de-energize solenoids controlling fluid flow and retention to the several hydraulic elements.

3,719,217

METHOD AND APPARATUS FOR DELIMBING A TREE

William A. Bottoms, Kamloops, British Columbia, Canada, assignor to Eaton Yale & Towne Canada Limited, London, Ontario, Canada

Filed Dec. 11, 1970, Ser. No. 97,097
Int. Cl. A01g *23/08*
U.S. Cl. 144—2 Z 20 Claims



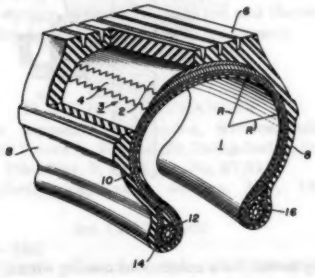
A tree having limbs thereon is positioned between a pair of delimbing jaws pivotally mounted on a frame. The jaws have means for removing the limbs from the tree upon movement of the jaws relative to the tree. Vibrating means is also provided for vibrating the jaws which results in a cutting action as the jaws engage the limbs on the tree to sever the limbs therefrom. Drive means is provided to rotate the jaws into engagement with the tree trunk and maintain the jaws in engagement with the trunk with a force dependent on the diameter of the tree trunk.

3,719,218

TIRE WITH BELT HAVING SCALLOPED EDGES

Allen E. Leybourne, III, Decator, Ala., assignor to Monsanto Company, St. Louis, Mo.

Filed March 8, 1971, Ser. No. 121,647
Int. Cl. B60c *9/18*
U.S. Cl. 152—361 5 Claims



Belted tires constructed with belt plies having less reinforcing cord at and near the edges thereof reduces the tendency for the plies to separate from the tire structure during vehicular use thereof.

3,719,219

PNEUMATIC TIRE

Laszlo Horvath, Gusztav Gundisch, Mandor Antal, and Mihaly Arvai, Budapest, Hungary, assignors to Orazagos Gumiipari Vallalat, Budapest, Hungary

Filed Apr. 8, 1971, Ser. No. 132,302
Int. Cl. B60c *5/16*
U.S. Cl. 152—379 10 Claims

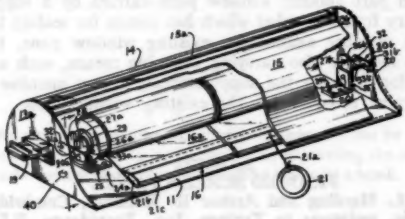
A pneumatic tire formed of an elastomer and one or more fabric ply reinforcements, in which a fabric reinforcement extends continuously around the annular cross-section of the tire at an angle of between 70° and 90° relative to the crown thereof. The tire is fastened to an elastic or rigid member, which may be a wheel rim component, by an adhesive bond formed by a suitable adhesive.

3,719,220

CLOSABLE SHADE COWL PROVIDED CURTAIN HANGER BRACKETS

Jeff H. Small, P.O. Box 583, Liberty, Tex.

Filed Oct. 29, 1971, Ser. No. 193,787
Int. Cl. E06b *9/08*; A47h *1/13*
U.S. Cl. 160—108 10 Claims



The cowl, adapted to be affixed to a structure, as the top of a window frame, has a hinged cover, so that a conventional shade, rolled up, is concealed in the cowl, all but the pull string. The conventional shade mounting brackets are altered to provide pivot arms which receive the respective end lug and pin of conventional shade roller rod ends. Then, between cowl end closures and shade mounting bracket, pivotally mounted, releasable latches are provided normally to retain the shade latched within the cowl in operative position to be rolled downwardly or upwardly to be fully obscured within the cowl. Curtain hanger brackets are provided by the cowl outwardly of its end closures.

3,719,221

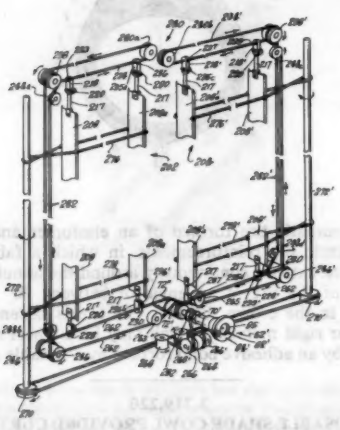
VENETIAN BLIND WINDOW ASSEMBLY

Raymond W. Hanson, 1260 El Camino Real, 310, Millbrae, Calif. 94030

Filed Feb. 11, 1971, Ser. No. 114,591
Int. Cl. E06b *9/30*
U.S. Cl. 160—168 5 Claims

Separate rotary means are provided for operating a cord which adjusts the effective size of a Venetian blind and the cord which tilts the slats, respectively. An adjustable coupling acts to connect a rotary manual or power

drive to one or the other of the rotary means. In a preferred form, the Venetian blind is housed in a closed space provided by parallel window panes, the drive being accessible outside of the space and controlling the Venetian blind while the window panes remain in situs supported by a suitable frame. In one form of the invention the slats are horizontal, and in another form of the invention the blind is arranged in two sets of vertical slats



movable toward or away from each other as well as being tiltable. Provision is also made for housing the blind in a space which consists in part an existing window pane and in part another window pane carried by a supplementary frame member which has means for sealing that frame member against the existing window pane, that frame member also carrying fastening means, such as a bolt, for securing the supplementary frame member to the frame member for the existing window pane.

3,719,222

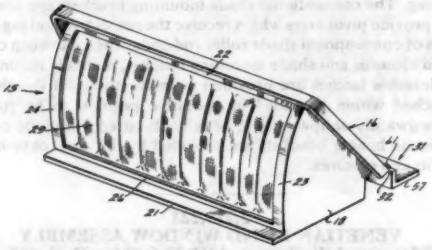
FRAMED SCREEN PANEL

Dale L. Harding and Arthur R. Kuhnash, Cambridge, Ohio, assignors to Textron, Inc., Providence, R.I.

Filed May 4, 1971, Ser. No. 140,026

Int. Cl. E06b *9/00*

U.S. Cl. 160—371 **2 Claims**



A framed screen panel having a plurality of side-by-side corrugations in a central portion which terminate adjacent marginal edges of the screen panel. A plastic frame is molded on the marginal edges of the screen panel.

3,719,223

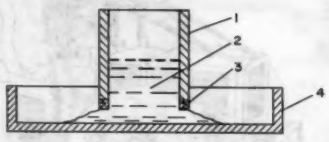
METHOD FOR QUIETLY CASTING FOAMED METAL

Chester P. Jarema, and Leonard M. Niebylski, Birmingham, both of Mich., assignors to Ethyl Corporation, New York, N.Y.

Division of Ser. No. 50,139, June 26, 1970, abandoned. This application Dec. 9, 1971, Ser. No. 206,309

Int. Cl. B22d *27/20, 37/00*

U.S. Cl. 164—79 **9 Claims**



A novel vessel and an improved method of casting batch liquid materials which solidify on cooling or standing utilizing said vessel; the method is especially advantageous for casting foamed metals whereby a composition containing molten metal and a suitable foaming agent is prepared in one or more upright, open-ended vessels provided with suitable gaskets and seated against the bottom of a mold. When the composition is ready to be cast, the vessels are vertically separated from the mold bottom so that only the lower ends of the vessels contact the composition as it quietly flows into the mold.

3,719,224

COOLING DEVICE FOR A CONTINUOUS CASTING WHEEL

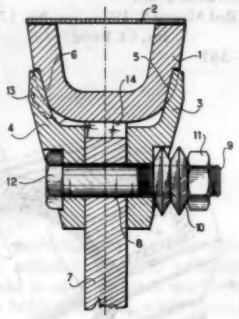
Gerard Lanque, 78 Maisons-Laffitte, France, assignor to Societe Nouvelle Spidem, Paris, France

Filed Oct. 26, 1971, Ser. No. 192,133

Claims priority, application France, Oct. 23, 1970, 7038394

Int. Cl. B22d *11/06*

U.S. Cl. 164—278 **10 Claims**



Cooling device for a continuous casting wheel, in which the casting groove has a U-shaped cross-section, having a substantially even thickness, and whose opening faces outwards, with the securing of the groove onto the hub of the wheel being achieved by shoes forming clips, the hub being provided with teeth or projections around the periphery to permit more efficient cooling of the bottom of the U-shaped casting groove in the wheel.

3,719,225

METHOD OF STORING HEAT

Matthew Mekjean, Niagara Falls, N.Y., and James S. Sconce, Lewiston, N.J., assignors to Hooper Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 636,544, May 5, 1967, abandoned, which is a continuation of Ser. No. 329,246, Dec. 9, 1963, abandoned. This application Feb. 13, 1969, Ser. No. 799,101

Int. Cl. F28d *13/00*

U.S. Cl. 165—1 10 Claims

This invention relates to a method of transferring heat and heat storage composition, employing a substantially anhydrous composition of alkali metal hydroxide, alkali metal nitrate and one or more of several additives. The operating temperature is from 250°– 1,250° Fahrenheit.

3,719,226

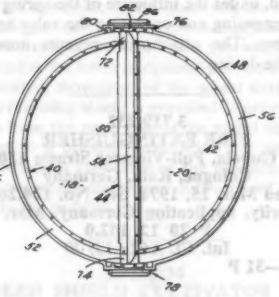
SEAL ASSEMBLY FOR A GAS TURBINE REGENERATOR

James K. Vallance, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 2, 1971, Ser. No. 168,229

Int. Cl. F28d *19/04*

U.S. Cl. 165—9 13 Claims



A secondary foil is attached to the end portions of C-shaped rubbing seals so that the foil spans the end portion of a crossarm seal. The secondary foil is concave and has a smaller radius of curvature than the C-shaped seals. Thermal expansion of the crossarm seal changes the contact line between an end foil attached to the end portion of the crossarm seal and the concave surface of the secondary foil and thereby maintains gas sealing without developing undue stresses.

3,719,227

PLATE HEAT EXCHANGER

Sverre Knut Jenssen, Saltsjobaden, Sweden, assignor to Thermovatic Sverre K. Jenssen AB, Saltsjobaden, Sweden

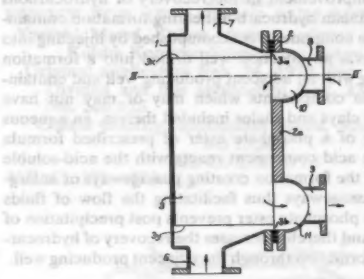
Filed Nov. 9, 1970, Ser. No. 87,915

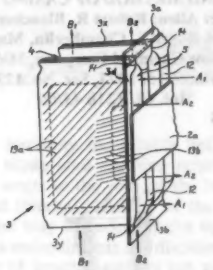
Claims priority, application Sweden, Nov. 10, 1969, 15366/69

Int. Cl. F28f *3/00*

U.S. Cl. 165—166 1 Claim

Heat exchange is effected through a thin plate strip having transversely extending folds which provide it with a sinuous shape, thereby forming channels extending transversely of the strip on both sides thereof for passage of the two heat exchange media, respectively. The first set of channels (those on one side of the strip) are sealed at their opposite ends, each of these channels having opposing walls which are joined together along the opposite lateral edge portions of the strip so as to form alternate folds of the strip into a continuous line along each of these lateral edge portions. The strip is sealingly and releasably connected to a surrounding casing along these continuous lines and at the opposite end portions of the strip; and when the latter is removed from the casing, the other side





of the strip defining the second set of channels can be made accessible for cleaning or inspection by separating the opposing side walls of these channels like the leaves in a book.

3,719,228

METHOD OF SELECTIVELY STIMULATING OIL WELLS, COMPOSITIONS THEREFOR, AND METHODS OF MAKING SUCH COMPOSITIONS

Calixto Fortunato Carcia, Hurst, Tex., assignor to Byron Jackson, Inc., Long Beach, Calif.

Filed June 11, 1971, Ser. No. 152,362

Int. Cl. E21b *33/13*

U.S. Cl. 166—281 4 Claims

A method of treating an earth formation, especially a calcareous earth formation, containing petroleum and connate brine to stimulate production of the petroleum without substantially increasing the production of brine. A liquid pre-flush composition, including a water solution of polar solvent having dissolved in the solution rosin soap and fatty acid soap is injected into the formation. The preflush composition reacts with the connate brine to produce a precipitate that blocks the brine-bearing passages, but the preflush composition does not react with the petroleum to produce a precipitate. Thus, the petroleum bearing passages are left open. Thereafter, an acid solution or other treating solution is injected into the formation to selectively stimulate or treat the oil-bearing passages. Preflush concentrates and compositions for use in the formation-treating method are disclosed as well as processes of making such compositions.

3,719,229

SECONDARY RECOVERY METHOD

Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed June 21, 1971, Ser. No. 155,310
Int. Cl. E21b *43/22, 43/27*
U.S. Cl. 166—271 17 Claims

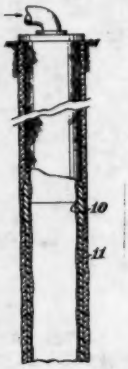
Significant improvement in the recovery of hydrocarbons from a subterranean hydrocarbon-bearing formation containing acid-soluble components is accomplished by injecting into the formation via an injection well drilled into a formation communicating with an adjacent producing well and containing acid-soluble components which may or may not have water-sensitive clays and shales included therein, an aqueous acidic solution of a phosphate ester of prescribed formula whereupon the acid component reacts with the acid-soluble components of the formation creating passageways or enlarging existing passageways thus facilitating the flow of fluids therein and the phosphate ester prevents post precipitation of dissolved salts and thereby increases the recovery of hydrocarbons from the formation through the adjacent producing well.

3,719,230

CASING PIPE AND METHOD OF CASING A BOREHOLE

Ray F. Kemp, Port Allen; Robert R. Blanchard, Baton Rouge, both of La., and Roger S. Chamberlin, Magnolia, Ark., assignors to The Dow Chemical Company, Midland, Mich.

Filed March 15, 1971, Ser. No. 123,950
Int. Cl. E21b *43/00*
U.S. Cl. 166—315 9 Claims



An article of manufacture and its use for casing boreholes used for transporting corrosive fluids is taught. A metal casing pipe is provided with a coating of a set resinous material having incorporated therein fibrous reinforcements. The so-coated casing pipe is placed in the borehole and when the steel is corroded away a reinforced resinous casing remains.

3,719,231

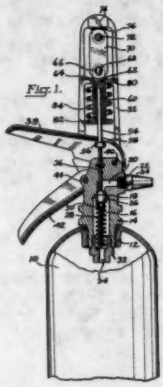
ATTACHMENT FOR AUTOMATIC OVERRIDE OF MANUALLY OPERATED COMPRESSED GAS FIRE EXTINGUISHERS AND ALARMS

Kenneth S. Haggard, Route 2, P.O. Box 293A, McMinnville, Oreg.

Filed May 14, 1971, Ser. No. 143,562
Int. Cl. A62c *13/24, 35/02*
U.S. Cl. 169—26 12 Claims

An attachment for a manually operated, valve controlled compressed gas fire extinguisher or alarm device includes a housing attachable to the device by means of pins which also pivotally mount the conventional valve operating hand levers of the device. A plunger, guided freely by a spring loaded plunger operator, extends through an opening made in the upper hand lever and is aligned with the valve. The plunger operator normally is held in retracted position by a heat responsive fuse link which interconnects the housing and

Fig. 1.



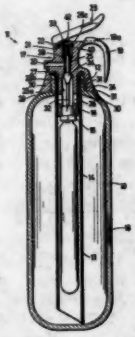
operator. Upon melting of the fuse link the operator and plunger extend, under the influence of the spring loading, the plunger thus engaging and operating the valve to release the compressed gas. The attachment permits normal manual operation of the device.

3,719,232

FIRE EXTINGUISHER

Gunter Gubela, Poll-Vingster Strasse 150–160, Cologne, Kalk, Germany

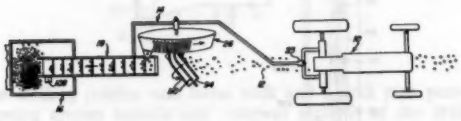
Filed Mar. 15, 1971, Ser. No. 124,261
Claims priority, application Germany, Mar. 14, 1970, P 20 12 142.0
Int. Cl. A62c *13/00*
U.S. Cl. 169—31 P 10 Claims



A refillable hand fire extinguisher comprised of a blow-molded thermoplastic glass-fiber reinforced plastic, extinguishing-material-containing bottle, on the male buttress-threaded neck of which a lever-valved discharge nozzle and hand grip head is threaded and sealed to the bottle, with a radially ported valve inlet nipple integral on the head coaxially spaced from a discharge riser tube mounted in the neck and extending to the bottle bottom; a replaceable elongated pressurized CO_2 gas cartridge, coaxially mounted in the discharge tube by its pierceable head threaded into the bottom end of the valve inlet nipple; and

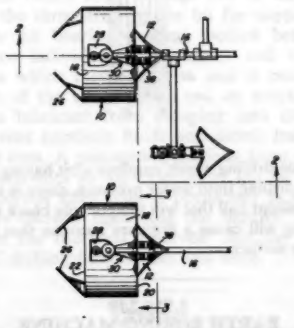
a reciprocable valving member carrying a cartridge piercing point. A valve safetying wedge and extinguisher stowage fitting, both of molded plastic, are also shown.

3,719,233
STONE GATHERER
Herbert Hehr, Route 1, Fredonia, N. Dak.
Filed Oct. 18, 1971, Ser. No. 189,960
Int. Cl. A01b *43/00*
U.S. Cl. 171—65 4 Claims



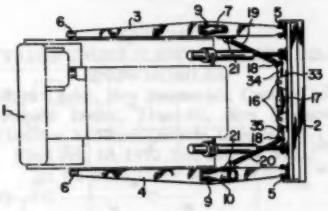
A mobile freame including a generally frusto-conical ground wheel journalled for rotation about a generally horizontal but inclined transverse axis with the lower periphery of the wheel in surface!to-surface contact with the ground and the minor and major diameter ends of the wheel open and closed, respectively Stone deflecting structure is positioned outwardly of the open minor diameter side of the wheel for deflecting windrowed stones into the lower periphery of the open side of the wheel and the interior of the wheel includes generally radially extending paddles supprted from the closed end of the wheel and provided for elevating stones collected in the lower peripheral portion of the wheel in response to rolling movement of the wheel over the ground. Also, a stone retaining shield is provided to prevent discharge of the stones from the open side of the wheel until they have been elevated to a presetermined level and gathered stone receiving structure is supported at the aforementioned level for receiving the stones discharged outwardly of the open side of the wheel by the paddles.

3,719,234
HIGH SPEED SHIELD CULTIVATOR LEVELER
Delbert M. Neece, 517 Jackson St., Gardner, Ill. 60424
Filed Feb. 25, 1971, Ser. No. 118,610
Int. Cl. A01b *35/32*
U.S. Cl. 172—135 1 Claim



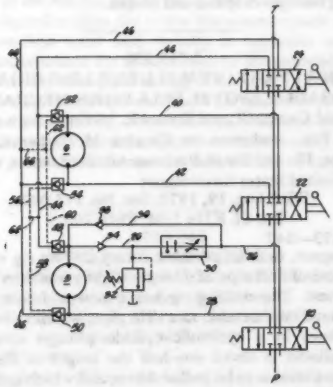
A ground leveler for use in association with a cultivator shovel which is pulled forwardly through the ground. The leveler is an inverted U-shaped housing having generally parallel spaced apart ground engaging side skirts flanking the sides of the cultivator shovel. The housing has a top bridging the side skirts and the leveler is hingedly mounted at the top of its forward end. Rearwardly and inwardly inclined wings constitute extensions of each of the side skirts. The terminal ends of the wing extensions are spaced apart at the centrally located path of the cultivator shovel. The leveler causes dirt erupted by the cultivator shovel to be confined to the general path of travel of the shovel and the ground relevelled.

3,719,235
DEVICE FOR ATTACHING BULLDOZER BLADES
Yasushi Marui, Tokyo, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Original application Feb. 26, 1970, Ser. No. 14,440. Divided and this application Nov. 22, 1971, Ser. No. 200,925
Claims priority, application Japan, Mar. 4, 1969, 44/15,885
Int. Cl. E02f *3/76*
U.S. Cl. 172—803 2 Claims



A mounting assembly for tiltable bulldozer blades including lateral blade load resisting struts and means for connecting the struts to the rear of the bulldozer blade in a way such that internal stressing of the blade for tilting purposes is in no way impeded by the strut mounting assembly. Various embodiments are disclosed though in each instance a pair of brace members are pivotally mounted in generally end to end relation on the rear of the blade, the inner ends of the brace members being yieldably interconnected so as to inhibit stress transfer between the brace members.

3,719,236
PLURALLY ENERGIZED POWER TONGS
Roger Smith, Jr., and John Wirt Turner, Jr., both of Houston, Tex., assignors to Byron Jackson, Inc., Long Beach, Calif.
Filed June 21, 1971, Ser. No. 155,163
Int. Cl. E21b *19/16*
U.S. Cl. 173—12 25 Claims



A power tong combination having a tong head adapted to be driven in opposite pipe gripping and turning directions in-

cluding a pair of reversible fluid motors respectively equipped with overrunning clutches which drive the gripping mechanism (a) at a low speed and low torque to start a threaded pipe connection without danger of cross-threading; (b) at high speed to spin the threaded pipe connection together or apart, and (c) at a high torque to make up or break out the pipe connection, the combination including a hydraulic power and control system with appropriate control valve means.

3,719,237

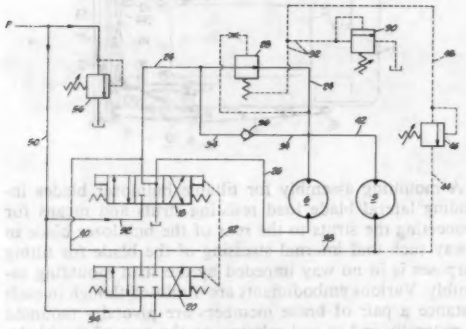
TUBING TONG HYDRAULIC DRIVE SYSTEM

Howard S. Flick, Long Beach, Calif., assignor to Byron Jackson, Inc., Long Beach, Calif.

Filed June 21, 1971, Ser. No. 155,054

Int. Cl. E21b *19/16*

U.S. Cl. 173—12 **10 Claims**



A power tong combination having a tong head for threaded pipe adapted to be driven in opposite pipe gripping and turning directions by a driving system which (1) drives only a first motor at a preselected torque and at high speed in the direction to connect threaded pipe: (2) jointly drives the first motor and a second motor to produce increased yet controlled torque to finally make up a pipe joint, and (3) jointly drives both motors to provide high torque to break out a pipe joint and then drives only the first motor to provide less torque and high speed to rapidly disconnect the pipe joint whereby the pipe gripping means remains engaged with pipe during the foregoing changes in speed and torque.

3,719,238

COMPACT ROTARY WELL DRILLING RIG WITH HYDRAULIC SWIVEL PULL DOWN MECHANISM

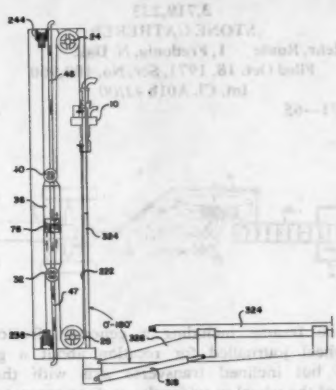
John David Campbell, and Robert E. McCann, both of Wichita Falls, Tex., assignors to Charles M. Dykema, Trustee, Chicago, Ill. and Small Business Administration, an agency of the United States Government

Filed Aug. 19, 1971, Ser. No. 173,009

Int. Cl. E21c *5/06*; F01b *29/08*

U.S. Cl. 173—147 **6 Claims**

A compact, mobile, portable rotary drilling rig which enables the use of drill pipe of a length slightly less than the height of the mast. The drilling rig has a power driven swivel or drilling head connectable to a drill pipe, which swivel may be pulled down by a hydraulic cylinder-plunger arrangement, which cylinder is about one-half the length of the distance which the swivel is to be pulled down, and which cylinder is so constructed that no hoses are connected directly to the movable hydraulic cylinder. The hydraulic cylinder exerts tension on cables to perform the pull down action. Provision is made to mount the present compact, mobile, rotary drilling rig, including the mast, on a vehicle which may be enclosed in a van-like structure, if desired, which van-like structure may be so insulated that men can work within an insulated enclosure



when the outside temperature is well over 100° or they can work therein when the outside temperature is subzero without injury to the machinery and without discomfort to themselves.

3,719,239

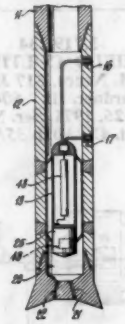
UP-HOLE SIGNALING DEVICE

Albert P. Richter, Jr., Houston, Tex.; James D. Bruner, Englewood, Colo., and Percy T. Cox, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 4, 1971, Ser. No. 169,014

Int. Cl. E21b *47/12*

U.S. Cl. 175—50 **6 Claims**



In borehole drilling which employs a bit having at least one passage for drilling fluid under pressure, there is apparatus to release a resilient ball that will temporarily block the passage. The blocking will cause a pressure increase that may be observed at the surface.

3,719,240

EARTH BORING MACHINE

James W. Young, Irving, and George A. Cason, Jr., Dallas, Tex., and Ernest O. Kunkel, Nevada, Mo., assignors to Dresser Industries, Inc., Dallas, Tex.

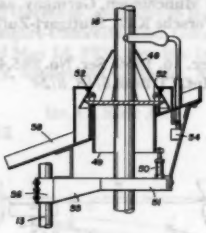
Original application Feb. 2, 1970, Ser. No. 7,923. Divided and this application Oct. 29, 1971, Ser. No. 193,870

Int. Cl. E21c *7/00*

U.S. Cl. 175—207 **1 Claim**

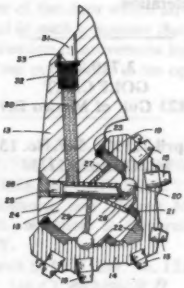
An apparatus for boring large diameter holes. A drilling mechanism is pivotally mounted on a base and ar-

ranged so that it may drill at any angle from the horizontal, either up or down. Means are provided to divert



the drilling residue and loose rock and a drill pipe positioning system installs and removes sections of the drill pipe.

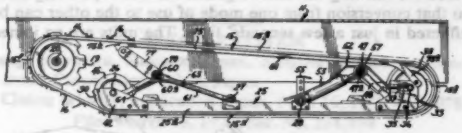
3,719,241
FREE BREATHING LUBRICATION SYSTEM FOR SEALED BEARING ROCK BITS
William Rex Bell, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Nov. 24, 1971, Ser. No. 201,850
Int. Cl. E21b *9/08, 9/35;* **E21c** *13/00*
U.S. Cl. 175—228 **26 Claims**



Three individual lubricant reservoirs are positioned in a three cone rotary rock bit with one of the reservoirs in each of the three arms of the bit for supplying lubricant to the bit bearing systems located between each of the three individual cone cutters and the bearing shafts upon which they rotate. A seal is positioned between each of the cone cutters and its bearing shaft to prevent the lubricant from escaping into the borehole and to prevent borehole fluids and debris from entering the bearing area. A passageway extends from each of the lubricant reservoirs to the exterior of the bit and a free breathing porous filter plug is positioned in each of the passageways thereby equalizing the internal pressure of lubricant in the lubricant reservoir and the hydrostatic pressure of drilling fluid in the well bore.

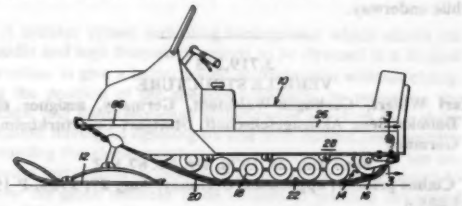
3,719,242
SNOWMOBILE TRACK SUPPORT SYSTEM
Marley J. Duclo, Roseau, Minn., assignor to Textron Inc., Providence, R.I.
Filed Feb. 4, 1971, Ser. No. 112,690
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **3 Claims**

A suspension system for a snowmobile is shown, having a pair of slide rails for engagement with the lower run of the drive track. A yieldable suspension system mounted on the body and positioned between the upper and lower runs of the track supports the snowmobile on the lower run. A pair of spaced guide rails are positioned below the upper return run to provide support for the upper run. The guide



rails are mounted so as to remain in contact with the upper run over substantially their entire length during substantially all movements of the suspension system with respect to the body.

3,719,243
RETRACTABLE UNDER SLIDE PANEL FOR DISABLED SNOWMOBILES
Joseph Gustave Losier, New Brunswick, Canada, assignor to Joseph Renald Losier, Tracadie, New Brunswick and Nicholas Dellelce, Sudbury, Ontario, Canada
Filed Feb. 18, 1971, Ser. No. 116,497
Int. Cl. B62b *15/00;* **B62m** *27/02*
U.S. Cl. 180—5 R **7 Claims**



An elongated sheet of flexible material stored in a compact rolled state at one end of a snowmobile upon a reel provided for supporting and winding the sheet of flexible material. The reel is positioned slightly endwise outwardly and above the adjacent end of the endless track of the associated snowmobile and the strip or panel of flexible material wound on the reel may be unwound from the latter, passed lengthwise beneath the lower reach of the endless track of the snowmobile and anchored to the remote end of the snowmobile. The panel is of a width adapted to span the entire transverse extent of the associated endless track and thereby is operative to form a smooth undersurface for that portion of the associated snowmobile normally occupied by the lower reach of the endless track assembly of the snowmobile. This smooth undersurface enables the snowmobile, when disabled and when the flexible panel is disposed in operative position, to be readily manually pushed or towed behind another snowmobile or similar vehicle.

3,719,244
RECREATIONAL VEHICLE
Hobart G. Miller, and James F. Mariol, both of Chicago, Ill., assignors to Apeco Corporation, Evanston, Ill.
Filed Oct. 7, 1971, Ser. No. 187,409
Int. Cl. B62d *53/04*
U.S. Cl. 180—14 R **22 Claims**

A recreational vehicle of composite construction made up of a power unit, or tractor, and a self-supporting living unit, the units being telescoped together and interfitted to form a single rigid structure for safe and easy driving at highway speeds. The power unit, in addition to a pair of steerable driv-

ing wheels, has a pair of auxiliary wheels which are normally retracted but which are extendible to permit the power unit to be separated for independent usage as a runabout when the living unit is parked in a camp site or the like. Means are provided for drawing the units together and for separating them so that conversion from one mode of use to the other can be effected in just a few seconds' time. The units are so joined

and constructed that when drawn together, and with the auxiliary wheels retracted, the appearance is that of a vehicle having a single frame and body. The rear wall of the power unit and front wall of the living unit, upon assembly, lie closely face-to-face and have registering doorways to permit easy movement of the passengers back and forth between the units while underway.

3,719,245

VEHICLE STRUCTURE

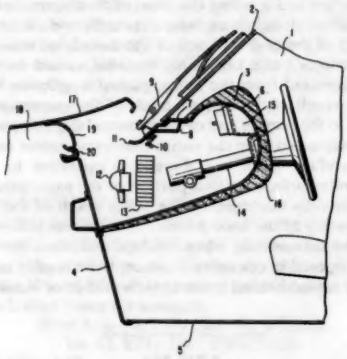
Karl Wilfert, Gerlingen-Waldstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Aug. 26, 1970, Ser. No. 67,142

Claims priority, application Germany, Aug. 27, 1969, P 19 43 485.6

Int. Cl. B60k *37/00*

U.S. Cl. 180—90 **27 Claims**



A vehicle structure disposed in the forward part of a passenger space, particularly of a passenger motor vehicle which serves for the accommodation and mounting of auxiliary installations, instruments and the like; the structure thereby projects into the vehicle interior space in a generally rearward direction and closes off the vehicle interior space with respect to the adjoining vehicle space, e.g., forming the engine or luggage space; the structure is constituted by a hollow body that is accessible only from the outside for servicing the auxiliary installations and instruments.

3,719,246

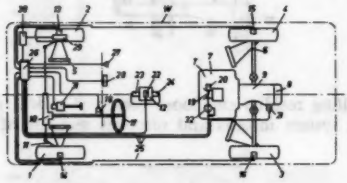
DEVICE IN VEHICLES, PARTICULARLY AUTOMOTIVE VEHICLES, FOR SKID PREVENTION

Helmuth Bott, 7254 Munchingen, Germany, assignor to Firma Dr. -Ing. h. c. F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed Dec. 16, 1969, Ser. No. 885,438

Int. Cl. B60t *8/18, 8/24*

U.S. Cl. 180—103 **20 Claims**



A device for automotive vehicles including an antiblocking mechanism and means for skid prevention. The device essentially includes measuring instruments which detect the instantaneous driving condition and which are coupled with a control mechanism responsive to specific critical values of the vehicle. This control mechanism triggers actuatable means for the automatic control of at least one device serving to keep the vehicle on course upon reaching a predetermined critical value of lateral acceleration.

3,719,247

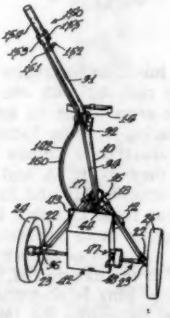
GOLF CART

Roger M. Hollis, 2823 Gulf of Mexico Drive, Longboat Key, Sarasota, Fla.

Filed April 7, 1971, Ser. No. 132,127

Int. Cl. B62d *51/04*

U.S. Cl. 180—19 H **14 Claims**



A collapsible powered two-wheel golf bag cart including a frame, collapsible leg structures on the frame each carrying one wheel, golf bag support means on the frame, a handle on the frame for manipulating the cart, a power unit detachably supported on the frame between the wheels, an electric motor in the power unit, an output shaft from the power unit, a disconnectible coupling for connecting the output shaft to drive one of the cart wheels, a disengageable clutch in the power unit connecting the motor and the output shaft, a battery in the power unit in circuit with the motor, and circuit control means on the handle for energizing the motor forwardly or reversely and for varying the speed of the motor.

3,719,248

DOOR LOCK, ESPECIALLY FOR MOTOR VEHICLES

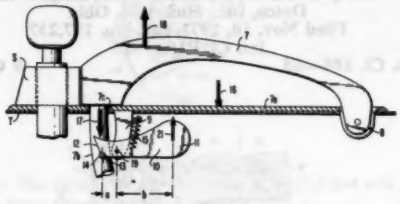
Werner Breitschwerdt, Stuttgart; Gunter Gmeiner, Sindelfingen; Christian Grabner, Maichingen, and Gerhard Sigmund, Stuttgart, all of Germany, assignors to Daimler-Benz Aktiengesellshaft, Stutgart-Unterturkheim, Germany

Filed May 14, 1971, Ser. No. 143,335

Claims priority, application Germany, May 15, 1970, P 20 23 859.9

Int. Cl. E05c *3/36*

U.S. Cl. 180—112 6 Claims



A door lock, especially for motor vehicles, which is equipped with a pull handle and with a device preventing movement caused by forces due to inertia of those parts of the door lock which are movable and have a significant weight; the device for preventing such movement includes, in addition to the pivotally mounted pull handle, a rod connected to the end of the pull handle opposite its pivotal support which extends into the interior of the door where an equalization mass is pivotally supported in such a manner that in case of a sudden change in the direction of movement initiating the inertia forces, a pivoting of the pull handle in the opening direction is prevented.

3,719,249

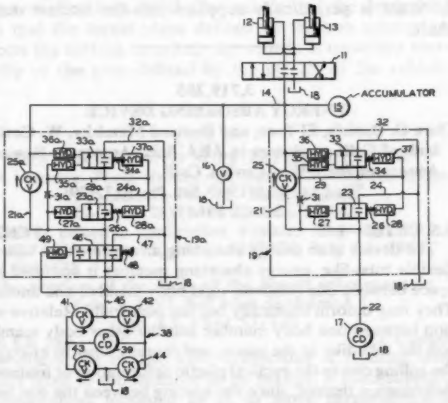
POWER STEERING SYSTEM AFFORDING EMERGENCY STEERING CAPABILITY

Lanson Becker, Galesburg, and Theron M. Huffman, Paw Paw, both of Mich., assignors to General Signal Corporation, Rochester, N.Y.

Filed March 5, 1971, Ser. No. 121,342

Int. Cl. B62d *5/08*

U.S. Cl. 180—79.2 R 7 Claims



The disclosure concerns hydraulically operated power steering systems for vehicles, particularly large articulated vehicles. The system includes a closed center steering valve which normally is supplied with oil from an engine driven pump, and it incorporates an accumulator and a ground drive pump which provide sufficient hydraulic power to permit steering during extended periods of engine-off towing.

3,719,250

SPEAKER SYSTEM

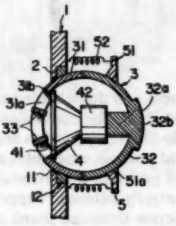
Kouji Maekawa, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Claims priority, application Japan, Mar. 16, 1971, 46/17070

Filed March 15, 1972, Ser. No. 234,930

Int. Cl. G10k *13/00*; H04r *1/28*

U.S. Cl. 181—31 B 4 Claims



A speaker system mounting arrangement which allows the middle and high frequency sounds to be directed in a desired direction to give a better sound reproduction without changing the position of the speaker enclosure, by mounting the middle and high frequency sound range speakers in a globe member having an opening on one side thereof and movably mounting the globe member in an opening formed in the enclosure installation or mounting board and is spring biased to allow the globe member to be rotated to position the sound axis of the speaker in any desired direction without moving the speaker enclosure.

3,719,251

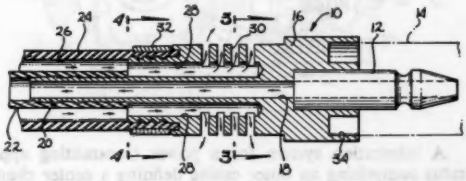
DIFFUSER APPARATUS FOR PNEUMATIC TOOLS

John R. Hedrick, La Crescenta, Calif., assignor to Hall International Inc., Santa Barbara, Calif.

Filed March 31, 1971, Ser. No. 129,796

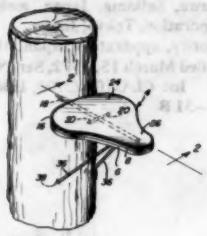
Int. Cl. F01n *1/10, 7/18*

U.S. Cl. 181—36 A 7 Claims



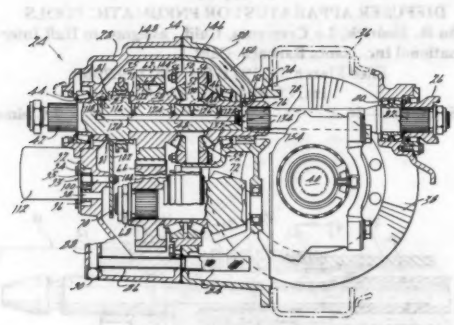
A diffuser apparatus to disperse a gaseous stream wherein the apparatus is formed as a single integral unit having an internally located supply passage, a gaseous exhaust passage surrounding the supply passage, a plurality of spaced apart annular openings communicating the ambient with the exhaust passage through the outer housing wall.

3,719,252
TREE SEAT
Garen R. Tiley, 8012 Crystal Valley Cove, Little Rock, Ark.
Filed Dec. 20, 1971, Ser. No. 209,991
Int. Cl. A47c 9/10
U.S. Cl. 182—187 9 Claims



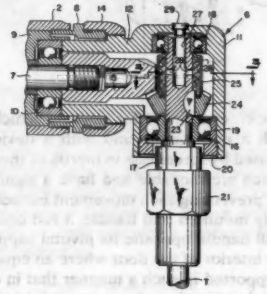
A readily attachable and detachable portable type tree seat of requisite size and shape for convenient use by a hunter. It has an inward cantle-like body portion and a pommel-like forward or outward end portion, resembles a bicycle seat or saddle in top plan, and provides a comfortably resilient seat for the occupant. A centrally balanced supporting rod is fixed on the seat and has a screw-threaded shank or stud which can be expeditiously embedded and temporarily screwed and securely anchored on the tree for convenient reliable use in the special environment at hand. A V-shaped prop has pointed anchoring ends and a U-shaped vertex portion which is hingedly mounted on an adapter lug carried by the non-twisting portion of the embedded rod.

3,719,253
LUBRICATING SYSTEM FOR POWER TRANSMITTING APPARATUS
Sam E. Dukes, Detroit, and Edwin C. Maki, Bloomfield Hills, Mich., assignors to North American Rockwell Corporation, Pittsburgh, Pa.
Filed July 13, 1971, Ser. No. 162,176
Int. Cl. F16n 7/36
U.S. Cl. 184—6.12 12 Claims



A lubrication system for a power transmitting apparatus comprising an outer casing defining a center chamber including a liquid lubricant sump, a shaft journalled for rotation within the casing and gear means located within the chamber and operatively connected to the shaft. A lubrication passage is formed within the shaft. This passage has two openings to exterior of the shaft for the introduction of lubricant to the passage. First lubricant supply means supply lubricant from the sump to one of the passage openings at a predetermined pressure and second lubricant supply means supply lubricant from the sump to the other of the openings at a pressure less than the predetermined pressure. One way valve means are located in the other of the openings and prevent the flow of lubricant to the passage through the second opening only when the fluid pressure within the passage is less than the fluid pressure outside the passage and proximate the second opening.

3,719,254
LUBRICATED ANGLE DRIVE ATTACHMENT FOR AIR OPERATED TOOL
Philip A. Snider, Hicksville, Ohio, assignor to Dotco, Inc., Hicksville, Ohio
Filed Nov. 10, 1971, Ser. No. 197,237
Int. Cl. F16n 7/18
U.S. Cl. 184—64 9 Claims

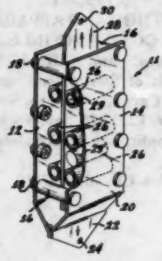


An angle drive attachment comprising an angular housing having one leg thereof detachably secured to the end of an air motor housing on whose rotor shaft is mounted a bevel pinion which meshes with a bevel gear keyed onto the output shaft which is journaled in the other leg of said angular housing, said attachment being characterized in that the output shaft is hollow to constitute a lubricant reservoir and has therearound and rotatable therewith a sleeve of absorbent material from which the lubricant is metered in finely divided form by centrifugal force directly onto the teeth of the bevel gear and into the zone of intermesh of the teeth of said bevel pinion and gear thus to lubricate the same. The angular housing of the attachment is provided with a lubricant fitting through which lubricant is periodically supplied into the hollow output shaft.

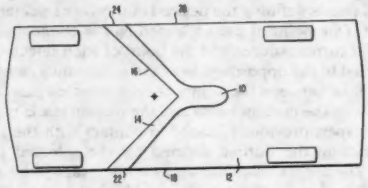
3,719,255
ENERGY ABSORBING DEVICE
Clare G. Daniels, El Toro, and Bernard Mazelsky, W. Covina, both of Calif., assignors to ARA, Inc. (Aerospace Research Associates, Inc.), West Covina, Calif.
Filed April 21, 1969, Ser. No. 817,979
Int. Cl. F16f 7/12
U.S. Cl. 188—1 C 3 Claims

The device is an energy absorbing arrangement in which a flexible tube-like, energy absorbing member is confined in a space between one relatively rigid body member and another. They may deform elastically but not plastically. Relative motion between one body member and the other body member roll the tube-like in the space, and thereby absorbs energy in the rolling due to the cyclical plastic deformation or hysteretic deformation thereof, since the spacing between the one body member and the other body member is less than the unstressed and undeformed diameter of the flexible, tube-like member. A nondeformable rigid cylindrical retainer means is positioned within the flexible tube-like member to limit the

radial deformation thereof to prevent stress relieving plastic flow or creep of the flexible tube-like energy absorbing member. The rigid body members may be cylindrical with an annular space between them.



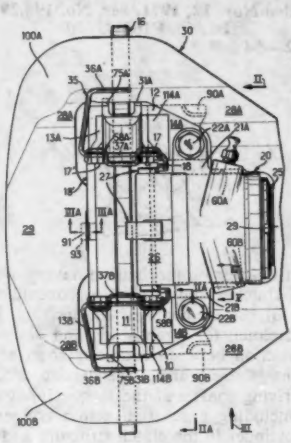
3,719,256
RETRO-ROCKET BRAKING SYSTEM FOR LAND VEHICLES
Carl C. Clark, 23 Seminole Ave., Baltimore, Md. 21228
Filed June 18, 1971, Ser. No. 154,333
Int. Cl. B60k *1/12*
U.S. Cl. 188—2 R **3 Claims**



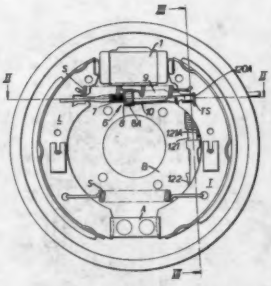
A rocket motor is secured to the frame adjacent the underside of the vehicle and is provided with two diverging nozzles extending forwardly at an angle to the center line of the vehicle and terminating at the sides thereof. The lines of thrust along each nozzle intersect rearwardly of the center of mass of the vehicle and are disposed at approximately a 5° incline relative to the horizontal such that the thrust plane defined by the two nozzles intersects the surface on which the vehicle is travelling rearwardly of the area defined by the wheels of the vehicle.

3,719,257
DISC-BRAKE AND SUPPORT STRUCTURE
Jean Maurice, Paris, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France
Filed May 8, 1970, Ser. No. 35,643
Claims priority, application France, May 4, 1969, 6915621; May 11, 1969, 6919288; July 11, 1969, 6923672
The portion of the term of the patent subsequent to Feb. 3, 1987, has been disclaimed
Int. Cl. F16d *55/228*
U.S. Cl. 188—73.4 **21 Claims**

A disc-brake of the kind comprising a rotating disc rigidly fixed to the member to be braked, a fixed support, to brake-shoes mounted so as to move perpendicularly to the plane of the disc on each side of said disc, an actuating unit and a transfer member, said actuating unit acting directly on one of said brakeshoes and indirectly on the other through the intermediary of said transfer member, in which said transfer member bears solely on three supporting areas which are flat, two of said areas being incorporated in said fixed support on the same side of the disc, while the third area is disposed on the other side of said disc, thus providing improved means for retaining said transfer member in position.



3,719,258
VEHICLE BRAKES
Hugh Grenville Margetts, Birmingham, England, assignor to Girling Limited, Birmingham, England
Filed Aug. 23, 1971, Ser. No. 173,989
Claims priority, application Great Britain, Aug. 24, 1970, 40,573/70
Int. Cl. F16d *65/56*
U.S. Cl. 188—79.5 P **3 Claims**



An auto-adjuster mechanism for an internal shoe drum brake of the type having an adjustable length strut through which handbrake actuating forces are transmitted from a handbrake mechanism to the shoes is characterized by a pawl and ratchet adjuster of which the pawl is pivotally mounted and is subjected to the action of a coil spring stressed both in torsion (to urge the pawl in a direction to effect adjustment) and in compression (to urge the pawl yieldingly into engagement with the ratchet) and only operates to effect adjustment of the strut during operation of the service brake means.

3,719,259

CLUTCH WITH TORQUE RESPONSIVE VALVE

Lawrence D. Burcz and George E. Lemieux, Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 12, 1971, Ser. No. 198,295
Int. Cl. F16d 43/20
U.S. Cl. 192—54 8 Claims

A power transmission mechanism having multiple ratio gearing and clutches and brakes for controlling the relative motion of the elements of the gearing, including a torque input clutch for establishing and disestablishing a driving connection between a driving shaft and a power input element of the gearing, the driving connection between the driving shaft and the torque input member of the clutch including a reaction piston cooperating with an annular cylinder in the clutch structure and a cammed connection between the torque input shaft and the input member of the clutch including registering cam parts on said piston and on said clutch member whereby the torque transmitted through the clutch results in an axial force component on the piston, and valve means responsive to the relative angular displacement of the torque input shaft with respect to the clutch input member for establishing a pressure signal that is distributed to one side of the reaction piston which tends to oppose relative displacement of the torque input shaft with respect to the clutch input member

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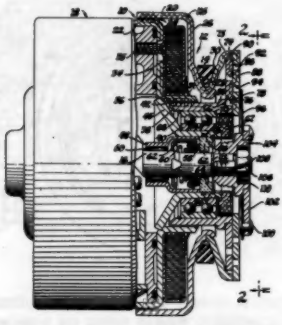
3,719,260

ELECTROMAGNETIC CLUTCH

John H. Heidorn, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1971, Ser. No. 212,596
Int. Cl. F16d 27/10
U.S. Cl. 192—84 C 3 Claims



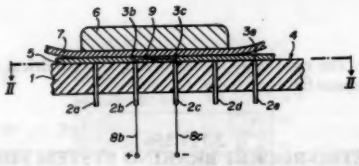
The electromagnetic clutch illustrated includes a coil arrangement wherein the coil housing is formed in part by a portion of an adjacent air-conditioning compressor casing and in part by a portion of a sheet metal pulley assembly, both portions of which serve as a part of the path of the magnetic flux. The clutch elements are such that a six-pole clutch field is included in the clutch path. The overall arrangement permits the pulley groove and clutch bearing to be located substantially closer to the compressor than with the prior art arrangements, thus being adaptable to a shorter output shaft for reducing the tendency toward shaft bending and compressor distortion resulting from belt load.

3,719,261

PRINTING METHOD AND APPARATUS USING CONDUCTIVE FUSIBLE INK

Paul Heinzer, Geneva, and Alfred Schweizer, Chene-Bourg/Geneva, both of Switzerland, assignors to Battelle Memorial Institute, Carouge, Geneva, Switzerland

Filed Nov. 12, 1970, Ser. No. 88,546
Claims priority, application Switzerland, Nov. 12, 1969, 16803/69
Int. Cl. G01d 15/10
U.S. Cl. 197—1 R 6 Claims



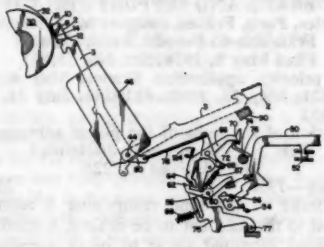
The invention provides a method of and an apparatus for electrically printing an outline on paper. For this an ink support of greater transverse than superficial conductivity has one surface covered with a solid and fusible conductive ink. Pairs of points defining the desired outline are selected on the support. One point of each selected pair is connected to one pole of a current source and the point of each selected pair is connected to the opposite pole of the source thus causing current to flow between the points of each selected pair. The ink melts along the current paths and the molten ink is picked up by the paper, previously placed in contact with the support, thus printing the outline defined by the selected pairs of points. The apparatus comprises an endless tape; inking means for applying conductive ink to one side of the tape; a printing head providing a plurality of localized contacts with the tape; a selector which selects, under the action of control signals defining the outline, a number of pairs of contacts and connects these pairs to an electric current source; and drive and guide means for the tape and the paper.

3,719,262

METHOD OF AND MACHINE FOR STORING DATA

John T. Taplin, 15 Sewall Street, West Newton, Mass.

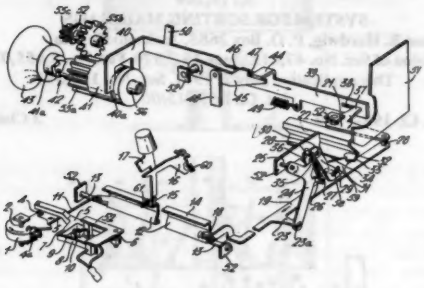
Filed Aug. 10, 1970, Ser. No. 62,415
Int. Cl. B41J 3/50
U.S. Cl. 197—1 R 6 Claims



A method of and machine for storing data by placing in superimposed relation a substantially invisible machine readable coded symbol and a visible man readable character in the

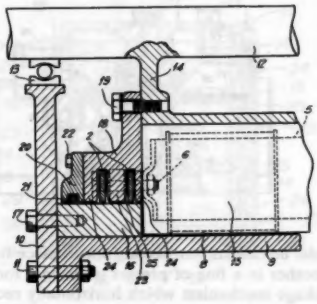
same area on a surface where the material may be subsequently man read or machine read.

3,719,263
DEVICE FOR LOCKING THE CARRIAGE OF AN ELECTRIC TYPEWRITER
Lorenzo Navone, Canton Vigna 49, Ivrea, Italy
Filed July 8, 1970, Ser. No. 53,148
Claims priority, application Italy, July 15, 1969, 52,647/69
Int. Cl. B41j 29/56
U.S. Cl. 197—193 4 Claims



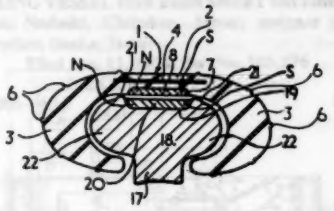
A device for locking the carriage of an electric typewriter to protect against damage during transport operated by the manual movement of the typewriter motor conrol switch between the ON and OFF position. The carriage lock comprises a projection which cooperates with a recess in a carriage member to lock the carriage in the center position. Operating in conjunction with the carriage lock are a means for locking the typewriter keys to prevent depression thereof and a means for disengaging the drive motor from the carriage return mechanism.

3,719,264
SEALING SYSTEM FOR CHAIN CONVEYORS
Claude Moreau, Nantes, France, assignor to Societe Financiere et Industrielle des Ateliers et Chantiers de Bretagne Prairie au Duc, Nantes Loire Atlantique, France
Filed Dec. 20, 1971, Ser. No. 209,787
Claims priority, application France, April 22, 1971, 7114362
Int. Cl. A23i 1/28
U.S. Cl. 198—1 6 Claims



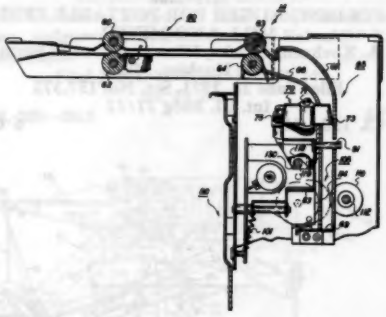
A sterilization apparatus in accordance with the invention comprises a pressurized chamber and means for conveying articles to be sterilized through the chamber.

3,719,265
CONVEYOR HANDRAILS
Robert Barry Redding, and David Aspin Thirlby, both of c/o Fort Dunlop, Erdington, England
Filed May 12, 1971, Ser. No. 142,613
Claims priority, application Great Britain, May 16, 1970, 23,813/70
Int. Cl. B66b 9/12
U.S. Cl. 198—16 R 1 Claim



A passenger conveyor comprising a C-shaped handrail, which is flexible, contains an embedded longitudinally extending reinforcement and includes a strip of magnetized material; drive means for the handrail; and support means, wherein the drive means has a magnetized rim to attract the handrail and the support means has a magnetized upper edge to repel and support at least part of the weight of the handrail.

3,719,266
SHEET STACKING APPARATUS
Homer Korn, Webster; Stephen J. Greenfield, and Denis J. Stemmle, both of Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sept. 9, 1970, Ser. No. 70,831
Int. Cl. B65g 57/00
U.S. Cl. 198—35 5 Claims

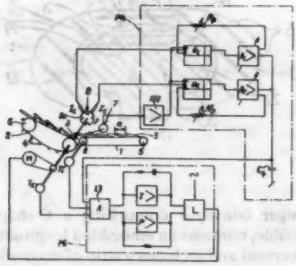


Apparatus for stacking copies from documents that are copied in repeated cycles. A transport delivers copies to a gate which collects them in a stack. A jogging device positioned at the entrance of the gate ensures proper corner registration of the copies in the tray. After the stack is assembled in the gate, the gate is pivoted out of the sheet path and pinch rolls associated with the gate serve to grip the stack and eject it into a receiving tray located below the gate. Cam actuated devices serve to reposition the gate and pinch rolls at the proper interval.

3,719,267
APPARATUS FOR ADJUSTING THE SPEED OF A TRANSPORT BAND EQUIPPED WITH GRIPPERS TO THE SPEED OF A CONVEYOR BAND ARRANGED AHEAD OF SUCH TRANSPORT BAND

Walter Reist, Hinwil, and Heinz Meili, Wadenswil, both of Switzerland, assignors to Ferag, Fehr & Reist AG, Zurich, Switzerland

Filed April 20, 1971, Ser. No. 135,690
Claims priority, application Switzerland, April 29, 1970, 6443/70
Int. Cl. B65g *37/00*; B65h *9/14*
U.S. Cl. 198—76 5 Claims

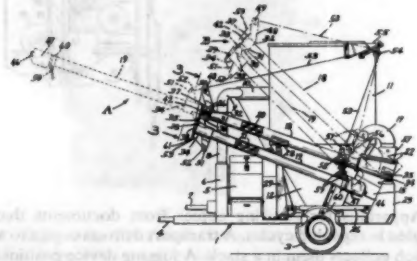


An apparatus for adjusting of accommodating the speed of a transport band equipped with grippers to the speed of a conveyor band arranged ahead of such transport band, wherein the conveyor band serves to convey a stream of individual articles, especially newspapers. According to the invention, there is contemplated the provision of two control or regulator means, of which the first serves to control the speed of transport band equipped with the grippers as a function of the average speed of the conveyed stream of individual articles, and the second control or regulator means serves to synchronize the movement of the aforesaid transport band with the movement of the individual articles, so that a respective gripper of the transport band seizes or engages with an individual article conveyed by the conveyor band.

3,719,268
FOLDING AUGER FOR PORTABLE FEED MILL AND MIXER

Earl A. Koehnen, Chaska, Minn., assignor to Farmhand, Inc., Hopkins, Minn.

Filed June 28, 1971, Ser. No. 157,372
Int. Cl. B65g *21/12*
U.S. Cl. 198—115 6 Claims

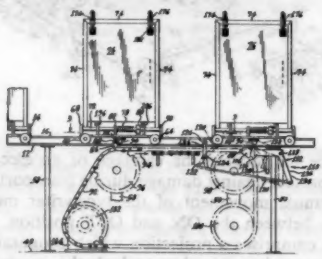


An auger conveyer for portable feed mills and mixers, including a pair of cooperating longitudinally inner and outer tubular members each having a conveyor auger section extending longitudinally therein. The inner tubular member is pivotally mounted at one end for swinging movements relative to the mixer on a generally horizontal axis extending transversely of the conveyor. The outer tubular member is pivotally connected at one end to the other end of the inner tubular member on a hinge axis parallel to the axis of swinging movement of the inner member for movements between an operative position in axial alignment with the inner member, and an inoperative storage position in underlying generally parallel relation to the inner member. An elevating cable is disposed to move the outer member from its storage position to its operative position.

3,719,269
SYSTEM FOR SORTING MAIL BAGS

Ernest B. Hardwig, P. O. Box 2685, Jacksonville, Fla.

Division of Ser. No. 47,812, June 19, 1970, Pat. No. 3,655,030.
This application July 2, 1971, Ser. No. 159,391
Int. Cl. B65g *15/00*
U.S. Cl. 198—179 3 Claims

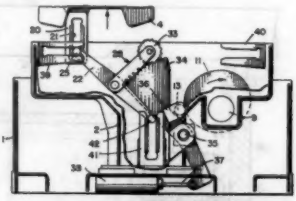


A sorting apparatus for empty sacks including movable carriers for traversing a track. The carriers are provided with sack holding and manipulating supports automatically actuated when the carrier is stopped at an unloading station to tilt and release the bag, while a movable frame at the station guides the bag into position on top of a stack.

3,719,270
WORKPIECE TRANSFER DEVICE

Albert P. Budris, Oak Lawn, and Louis F. Carrieri, La Grange Park, both of Ill., assignors to U.S. Industries, Inc., New York, N.Y.

Filed April 8, 1971, Ser. No. 132,282
Int. Cl. B65g *25/04*
U.S. Cl. 198—219 11 Claims

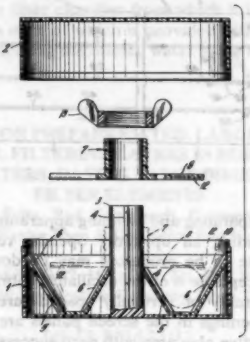


A transfer device for transferring a workpiece from one station to another in a line of presses utilizing a form of crank driven linkage mechanism which horizontally reciprocates a carriage between two extreme positions while carrying a workpiece. A lift frame on which the carriage reciprocates, raises the carriage and the workpiece at one of said positions and lowers the carriage and workpiece at the other of said positions to deposit the workpiece at the next station.

3,719,271
PACKING FOR SEMICONDUCTOR DISCS

Bernhard Authier and Helmut Deckert, Burghausen, Upper Bavaria, Werner Hofbauer, Munich, and Rudolf Bauer, Bavaria, Germany, assignors to Wacker-Chemitronic, Gesellschaft fur Elektronik-Grundstoffe m.b.H. Postfach, Burghausen, Upper Bavaria, Germany

Filed Nov. 12, 1971, Ser. No. 198,104
Int. Cl. B65d 57/00, 85/58
U.S. Cl. 206—1 R 2 Claims

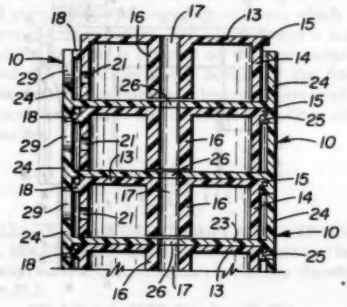


A packing for holding and shipping semiconductor discs comprising a can containing a bracket having rabbets in which the discs stand vertically with respect to the bottom of the can and are held fast with a certain tension. Thus the semiconductor discs do not rest on their flat surfaces, and therefore they cannot touch or scrape against each other. The can has a lid which may be sealed to the can by adhesive tape. The packing has the advantage that it makes possible the dust-free and breakage-free shipment of semiconductor discs of any size or thickness, so that any subsequent cleaning or further processing is avoided.

3,719,272
INTERLOCKING CASE FOR ELECTRONIC COMPONENTS

Norman R. Bodine, Oshkosh, and David C. Noetzelmann, Sr., Minatare, both of Nebr., assignors to Midwec Corporation, Oshkosh, Nebr.

Filed Nov. 3, 1971, Ser. No. 195,194
Int. Cl. B65d 7/00, 71/00
U.S. Cl. 206—65 F 8 Claims

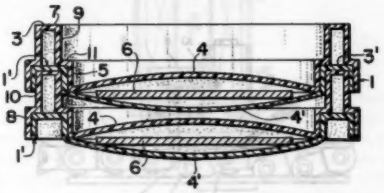


An interlocking case for electronic components which comprises an inverted cup shaped member having a plurality of circumferentially spaced apart tabs projecting radially from its top, and an open top cup shaped member having a plurality of circumferentially spaced tabs projecting inwardly from its side wall below the bottom of said member, the inverted cup shaped member being seated in said open top member. Said members have registering openings in their side walls for passage of wiring from the inverted cup shaped member, and means on their proximate side wall surfaces which prevent rotation of the two case members relatively to each other. The tabs on the top of one case engage the tabs on the bottom of another case for stacking a plurality of cases.

3,719,273
PACKING VESSEL FOR THIN SHEET MATERIALS

Iwao Abe, Nodashi, Chibaken, Japan, assignor to Chisso Corporation, Osaka, Japan

Filed Jan. 11, 1971, Ser. No. 105,276
Int. Cl. B65d 21/00, 71/00
U.S. Cl. 206—65 F 10 Claims

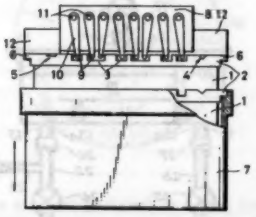


A container having cooperating lower and upper members that are adapted to fit together so as to form a plurality of cavities, the lower member having a plurality of concave bottom surfaces and an annular channel surrounding each concave bottom surface, the upper member having a plurality of convex surfaces and an annular channel disposed around the periphery of each such convex surface, the channel sections of the upper and lower members being constructed so that they will interfit in a nesting relationship

3,719,274
MECHANISM FOR DELIVERING RECORDED SHEET FILM SELECTED IN INDEXING DEVICE TO REPRODUCTION POSITION

Masahiro Yamamoto, Tokyo, and Takeo Iida, Matsudo, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed July 1, 1971, Ser. No. 158,749
Int. Cl. B07c
U.S. Cl. 209—80.5 5 Claims



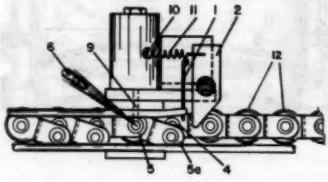
Mechanism for neatly delivering a recorded sheet film, which has been magnetically selected in the known film indexing device from a plurality of films each having magnetic material identification tag, with being suspended to the reproduction position. The mechanism comprises three means, the first of which is a pair of longitudinally extended members, each being adapted to be pivotally moved to engage with the free end of said tag to suspend the film in its operation

position; the second means is a pair of slider members, each being adapted to be slidingly moved along a pivot of said longitudinal member with accompanying the film with its tag free end sliding along one side of said longitudinal member; and the third means is a transversely extended member having two projections at the opposite ends for engaging with each of the tag ends to receive the film from said slider member for the reproduction.

3,719,275
APPARATUS FOR CONVEYING AND FILLING CAPSULES

Donald E. Lanigan, Greenlawn, and Johannes P. Biegert, Selden, both of N.Y., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 5, 1972, Ser. No. 215,607
Int. Cl. B07c 3/10
U.S. Cl. 209—79 **8 Claims**

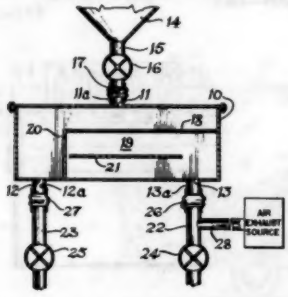


Improvement to an apparatus for conveying and filling capsules comprising a means for detecting the presence of an unseparated capsule in a capsule receiving means after the capsule has been subjected to a reduced pressure to separate the capsule into a body section and a cap section and a means for ejecting such unseparated capsule from said receiving means.

3,719,276
SIEVING

Robert William Allen, High Peak, Stanley Hall, Disley, and John Drane, 52 Yew Tree Drive, Stockport, both of England, assignors to Henry Simon Limited, Stockport, England

Filed March 27, 1970, Ser. No. 23,393
Claims priority, application Great Britain, May 28, 1969, 27,097/69
Int. Cl. B07b 1/00
U.S. Cl. 209—240 **8 Claims**

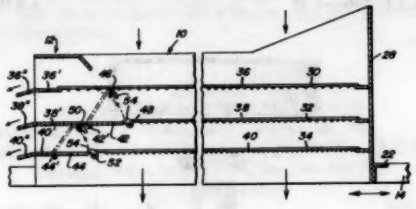


A method of sieving characterized by the inclusion of the step of forcing a current of air through the sieve co-currently with the material being sieved, whereby to achieve an increased throughput rate of the material being sieved, and apparatus for practicing such methods.

3,719,277
QUICK CHANGE SYSTEM OR VIBRATORY TRAY SYSTEM

Jack Michael, Box 155, Ohlman, Ill.

Filed Dec. 30, 1970, Ser. No. 102,790
Int. Cl. B07b 13/16
U.S. Cl. 209—258 **3 Claims**

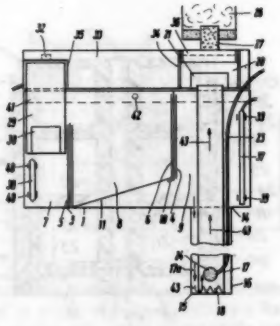


A grading, separating and blending apparatus for aggregate materials including an upwardly opening receptacle into which aggregate to be processed may be downwardly displaced. The receptacle is of the oscillatory vibrating type and includes a plurality of vertically spaced screen or similar panels. The openings in the screen panels are progressively smaller in effective plan area with each successive downward screen panel and the receptacle includes one open end and is reciprocal or oscillatable in a manner whereby the aggregate caught by the screen panels will be discharged off the corresponding ends of the panels. These ends of at least some of the screen panels have flap doors operatively associated therewith which may be selectively opened and closed and utilized to direct the discharge from one screen panel down onto the corresponding end of the next lower screen panel rather than allowing the aggregate to be discharged off the end of the upper screen panel. In this manner, selected blends of aggregate may be formed of selected grades of aggregate while other grades of aggregate are allowed to pass off the discharge ends of their respective screen panels.

3,719,278
EXTERNAL FILTERS FOR AQUARIA

Erwin Kolfertz, Bebelallee 9, Solingen-Merscheid, Germany

Filed Oct. 8, 1970, Ser. No. 79,114
Claims priority, application Germany, Dec. 17, 1969, G 69 48 723.6
Int. Cl. E04h 3/20
U.S. Cl. 210—169 **6 Claims**



An external filter for cleaning the water of an aquarium, wherein water is extracted from the aquarium and supplied to an inlet chamber from which it flows through a filter chamber to an outlet chamber which is fitted with a tube extending downwards from the bottom of the chamber, the tube being

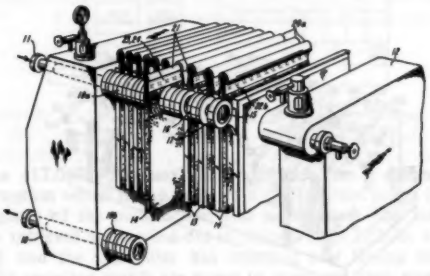
closed at its lower end, and a second tube which is mounted in the first tube and which opens at its lower end adjacent the lower end of the first tube and opens at its upper end into an overflow channel which is positioned above the outlet chamber, there being an air supply means which is arranged to inject air into the lower end of the second tube in order to initiate a gas lift for raising the filtered water from the outlet chamber via the tubes to the overflow channel which then directs it back into the aquarium. As an alternative, the inlet, which preferably functions with a siphonic action, may open directly into the filter chamber from which it flows into two outlet chambers each of which is provided with a similar gas lift device for returning the filtered water to the aquarium.

3,719,279

MOUNTING FOR PREFABRICATED, LARGE SURFACE, INDIVIDUAL FILTERING LAYERS IN HORIZONTAL LAYER FILTERS, HAVING LARGE DIMENSIONED FILTER ELEMENTS

Gunther Leigel-Seitz, Bad Kreuznach, Germany, assignor to Seitz-Asbest-Werke Theo & Geo Seitz, Bad Kreuznach, Germany

Filed Sept. 17, 1971, Ser. No. 181,369
Claims priority, application Germany, Sept. 23, 1971, P 20 46 827.3
Int. Cl. B01d *25/12*
U.S. Cl. 210—231 **9 Claims**



A mounting for prefabricated, large surface, individual filtering layers, which form filter packets when sandwiched between adjacent large dimensioned vertical filter elements in a complete layer filter, said mounting being characterized primarily in that each individual filtering layer is held vertically between the adjacent filter elements by a detachable connection comprising interengaging elements which are arranged above the filter packet. The arrangement is such that one connecting element is situated on the layer edge which rises beyond the upper horizontal border of the filter elements, while the other connecting element is arranged on the upper horizontal border of one or above both filter elements of a filter packet.

3,719,280

1,2,3 12A-TITRAHYDRO-7(2H)PLAIDOMENONES

William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Parsippany, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed Oct. 1, 1970, Ser. No. 77,373
Int. Cl. C07c *49/76, 49/80, 49/82*
U.S. Cl. 260—590 **2 Claims**

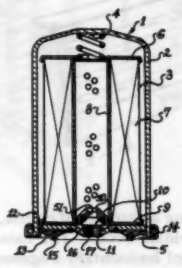
Pleiadenes substituted at the 7-position, e.g. 1,2,3,7-tetrahydro-7(1-methyl-4-piperidyl)pleiadene and 1,2,3,7,12,12a hexahydro-7-(1-methyl-4-piperidyl)pleiaden-7-ol, and dibenzoheptalenes substituted at the 8-position, e.g. 1,2,3,4-tetrahydro-8-(1-methyl-4-piperidyl)-8H-dibenzo[b,ef]heptalene, prepared from a corresponding ketone and Grignard reagent, are useful as anti-convulsants.

3,719,281

MULTIPLE APPLICATION SEALING MEANS FOR FLUID FILTERS

James V. Dieringer, Racine, Wis., assignor to Tenneco Inc., Racine, Wis.

Filed Apr. 12, 1971, Ser. No. 133,109
Int. Cl. B01d *27/00*
U.S. Cl. 210—440 **7 Claims**



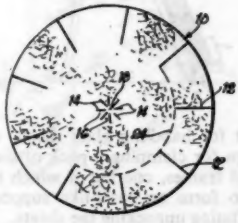
Disposable spin-on fluid fuel filter assemblies are made adaptable to fuel filter bases having threaded attachment posts of varying diameters and lengths by providing the filter element with resilient self-centering sealing means immediately adjacent the end of the threaded attachment post. Upon installation of the filter assembly onto a suitable filter base the conical seal is forced into and maintained in sealing engagement with the end of the attachment post by the element hold-down spring normally provided in spin-on filter assemblies.

3,719,282

UNIVERSAL COFFEE FILTER

Harlan A. Schwartz, Manitowoc, Wis., assignor to Schwartz Manufacturing Company

Filed Nov. 16, 1970, Ser. No. 89,616
Int. Cl. B01d *35/28*
U.S. Cl. 210—477 **13 Claims**



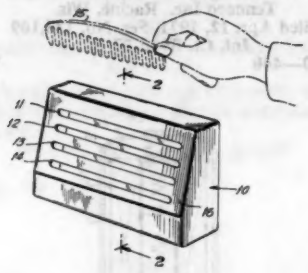
A coffee filter element universal to coffee baskets having bases of varying sizes and shapes. A plurality of slits extending inwardly from the periphery of the filter define portions adapted to fold upwardly at the vertical wall of a basket and to substantially seal thereagainst, the central portion of the filter lying against the base of the basket, thereby, in baskets smaller than the filter element forming a lipped filter element. The filter element is slitted at its center to accommodate basket stems. The display and dispenser package is configured to be suspended and to contain a plurality of circular coffee filter elements.

3,719,283

COMB CASE

John A. Urda, 97-11 Horace Harding Expressway, Lefrak City, N.Y.

Filed Jan. 29, 1971, Ser. No. 111,066
Int. Cl. A47y 7/00
U.S. Cl. 211—13 **1 Claim**



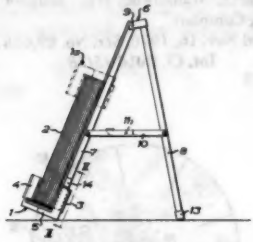
A case for holding a plurality of combs, each within its own seat for easy individual access. The case includes a housing having a plurality of horizontally disposed spaced-apart slots along one vertical side to provide access to the slots. Each of the seats comprises a trough along the inner side of the slot within which the tooth edge of the comb is removably seated.

3,719,284

EQUIPMENT FOR HANDLING GLASS SHEETS AND THE LIKE

Stig Arne Rasmus Rasmusson, Leif Key, Tommy Dahlstrom, and Ernst Georg Thelander, Emmaboda, Sweden, assignors to AB Emmaboda Glasverk, Emmaboda, Sweden

Filed Apr. 7, 1971, Ser. No. 132,044
Claims priority, application Sweden, Apr. 8, 1970, 4,759/70
Int. Cl. A47f 7/00; B65h 1/02
U.S. Cl. 211—50 **2 Claims**



Equipment for handling glass sheets, consisting of U-shaped clamps for clamping a pack of sheets for shipping and A-shaped frames, one leg of which is inserted into a clamp jaw to form an easel-like support for the pack, thereby facilitating unpacking the sheets.

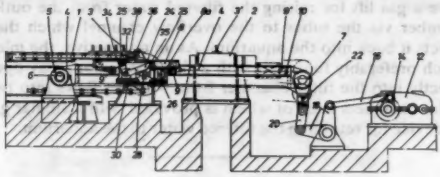
3,719,285

DEVICE FOR CROSS FEEDING INDIVIDUAL CURVED ROLLED RODS OR BARS

Georg Wilhelm Böse, Krefeld-Fischeln, Germany, assignor to Moeller & Neumann G.m.b.H.

Filed June 2, 1970, Ser. No. 42,688
Claims priority, application Germany, June 3, 1969, P 19 28 312.6
Int. Cl. B65g 17/00
U.S. Cl. 214—1 P **3 Claims**

A cross-feeding device for curved rolled rods and bars whose carrier elements **36** mounted on a plurality of carriage devices **8** which can be displaced selectively in common into contact with the rolled product and raised



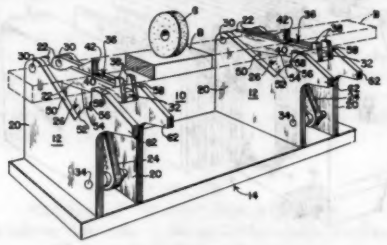
to lift the rolled product, whereupon they return together with the lifted product.

3,719,286

BILLET MANIPULATING UNIT

Robert J. Kazuba, Chicago, Ill., assignor to Pettibone Corporation, Chicago, Ill.

Filed July 22, 1971, Ser. No. 165,268
Int. Cl. B65g 7/00
U.S. Cl. 214—1 QG **7 Claims**



A billet manipulating unit adapted, in conjunction with similar units, to receive therein an elongated steel billet which is rectangular in transverse cross section, and the width of which is appreciably greater than its thickness and, by the manipulative action of two cooperating pivoted billet-engaging arms, to impart varying increments of unidirectional turning movement to the billet in order to present selected side surfaces of corner edges thereof to a grinding wheel for conditioning purposes.

3,719,287

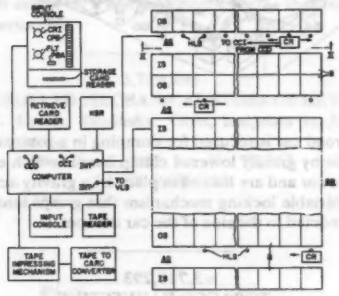
METHOD OF AND APPARATUS FOR MATERIAL STORAGE AND RETRIEVAL IN A WAREHOUSE SYSTEM

Raymond L. Billingsley, Fenton, Mich., Ralph L. Howard, Pittsburgh, Pa., and Donald H. Noreen, La Grange Park, Ill., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application Feb. 19, 1968, Ser. No. 706,289, now Patent No. 3,595,412, dated July 27, 1971. Divided and this application Mar. 8, 1971, Ser. No. 121,998
Int. Cl. B65g 1/06
U.S. Cl. 214—16.4 A **7 Claims**

An automatic large-scale warehousing system including a warehouse with a large number (8100) of bins (B) arrayed in aisles AS for storing enough products (17,000)

to service a complex of manufacturing plants (26 automobile assembly plants). A crane CR is associated with each aisle and is actuable to store or retrieve the material in the different bins B. A computer (FIG. 6) is associated with this system of bins and part of the memory core (Inventory Core) of the computer carries an inventory of the storage; that is, an identification of each bin and the material stored in this bin. The core of the Computer is also programmed so that in response to selective commands on punch cards, the cranes are automatically actuated either to store material in open bins, identified in the Computer as open, or to retrieve material from the bins where they are stored. The Inventory Core of the Computer is automatically changed to record each storage and each retrieval. The Inventory Core of the Computer has facilities for storing the condition of each bin (8100) and can store data identifying the bin position of any of



the (17,000) products. The computer has a diagnostic program which in the event of a malfunction prints intelligence of the malfunction and its location. The storing or retrieval are carried out in defined steps (FIGS. 4 and 5) and the Computer has counting and timing words. The counting words are preset to count out each step and the timing words to time out each step. If a step is timed out before it counts out the diagnostic program is enabled. The complete warehousing is carried out by the cooperation of the Computer and the bin system and not by operation of wired logic associated with different sets of bins.

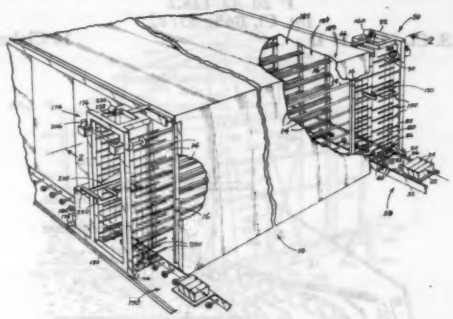
3,719,288

ARTICLE HANDLING APPARATUS

Robert A. Schmitt; Gary W. Betts; Forrest H. Johnson, and Lloyd Carlson, all of Vancouver, Wash., assignors to Columbia Machine, Inc., Vancouver, Wash.

Filed Aug. 2, 1971, Ser. No. 168,175
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 C **20 Claims**

Apparatus for loading articles in a substantially continuous single-file stream onto the infeed end, of a selected rack in a set of vertically stacked racks. The apparatus includes an infeed conveyor for moving articles horizontally and in succession into a region below the infeed ends of the racks. An elevator lifts articles in succession directly from the infeed conveyor and raises them to a position adjacent the infeed end of the selected rack. A shifter, which is vertically adjustable to different positions adjacent the infeed ends of different racks, is operable to move articles off the elevator and onto the selected rack. A transfer mechanism, adjustable to a position adjacent the outfeed end of the selected rack, receives articles discharged from the rack and shifts them vertically onto an outfeed conveyor below the outfeed ends of the racks. The racks are disposed in side-by-side sets and the shifter, elevator, and transfer mechanism are movable between different sets.



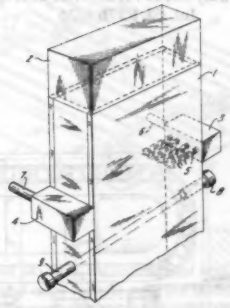
Control means connected to the elevator, shifter, and transfer mechanism moves them automatically as required between selected sets and between selected racks in the sets.

3,719,289

METHOD AND DEVICE FOR FORMING A STREAM OF MATERIAL CONSISTING OF TANGLED SHREDS SUCH AS TOBACCO

Claude Buisson, Olivet, and Jean-Pierre Delaunay, Saint-Jean-de-Braye, both of France, assignors to Service D'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed Dec. 11, 1970, Ser. No. 97,142
Claims priority, application France, Dec. 11, 1969, 6942848
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 CA **4 Claims**



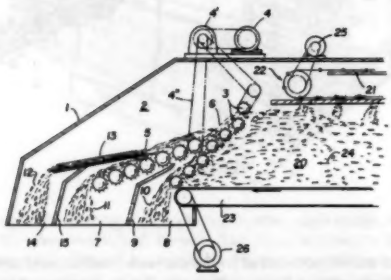
In a method for forming a stream of material consisting of tangled shreds such as tobacco and having a substantially constant density, wherein a reserve supply of material having a substantially constant volume is formed by bringing the material in the direction of the stream and discharging the said material in the same direction, further comprising the step of exerting the pressure of a compressed gaseous fluid on the said reserve supply of material in the direction of the stream.

3,719,290

DISCHARGE HEAD FOR A BIN, ESPECIALLY A BULK METERING BIN

Herbert Voigtländer, Weiterstadt, Germany, assignor to Carl Schenck Maschinenfabrik G.m.b.H., Darmstadt, Germany

Filed June 8, 1971, Ser. No. 150,970
Claims priority, application Germany, June 30, 1970, P 20 32 128.2
Int. Cl. B65g 65/42
U.S. Cl. 214—17 D 10 Claims



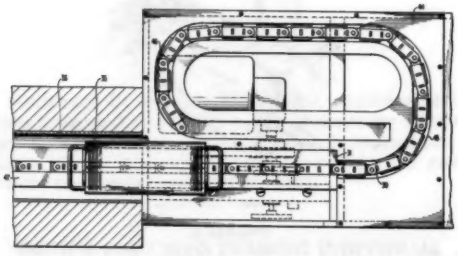
The present discharge head is intended for removing a plurality of even and uniform flows of material, such as chips and fibers intermixed with binders from a bin. This is accomplished by a first row of spiked rollers inclined toward the horizontal and by at least one flow dividing means which may also comprise a row of spiked rollers or an endless conveyor belt. The second row forms an angle with the horizontal which is more acute than the respective angle between the first row and the horizontal.

3,719,291

DIFFUSION FURNACE LOADER

Joseph Redan, Parsippany, N.J., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed July 28, 1971, Ser. No. 166,731
Int. Cl. F27b 9/26
U.S. Cl. 214—34 9 Claims



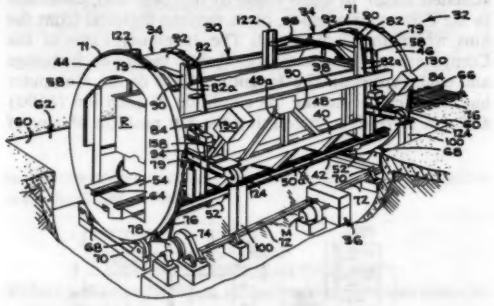
A furnace-loading mechanism for use with a diffusion furnace, the components thereof facilitating the entry and withdrawal of a wafer-bearing quartz boat member relative to a furnace through an articulated chain link construction which is capable of storage in a horizontal plane on the loader.

3,719,292

CLAMP MECHANISM FOR ROTARY CAR DUMPER

Ralph C. Ouska, Hinsdale, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed April 21, 1971, Ser. No. 135,960
Int. Cl. B65g 67/54
U.S. Cl. 214—55 4 Claims



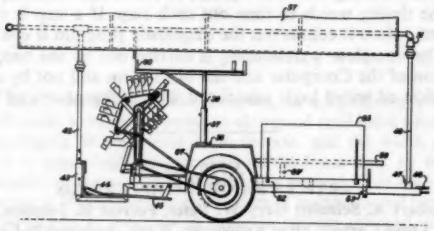
A railroad car is secured for dumping in a rotary car dumping cradle by gravity lowered clamp beams which engage the top of the car and are locked in place by a gravity actuated, infinitely variable locking mechanism that grasps tension members connected to the side of the car dumper.

3,719,293

TOBACCO HARVESTING

C. Winston Swain, and Louis E. Dailey, Jr., both of Ahoskie, N.C., assignors to Dailey Irrigation Co. Inc., Ahoskie, N.C.

Continuation-in-part of Ser. No. 860,338, Sept. 23, 1969. This application Jan. 13, 1971, Ser. No. 106,042
Int. Cl. B60p 1/36
U.S. Cl. 214—83.3 2 Claims



The Hander-Passer attachment for use on a tobacco harvester that replaces individuals who were formerly used for this purpose; it being a unique way of handling or passing the tobacco directly from the primers or croppers to the loopers.

3,719,294

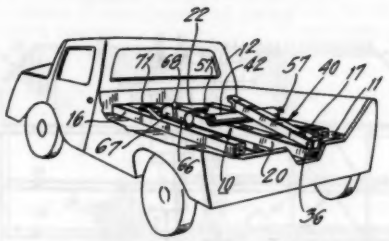
TOW BAR APPARATUS

Joseph Aquila, 144-41 231st Street, Rosedale, N.Y.

Filed Nov. 9, 1970, Ser. No. 87,863
Int. Cl. B60p 3/12
U.S. Cl. 214—86 A 8 Claims

A truck-mounted towing crane is constructed with a tubular boom pivoted at one end and raised by a power cylinder. A tow bar assembly is pivotally mounted to the other end of the

boom so that the former may be folded back to a storage position and the boom lowered for storage of the crane in a small space. The tow bar assembly includes a downward and rear-



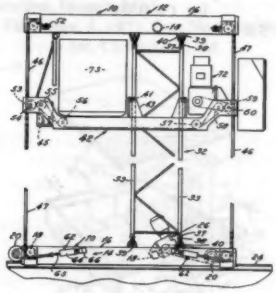
ward extension for the boom and a cross-bar supported from below at its center by a ball joint connected to the free end of the boom extension.

3,719,295

CONTROLLED MECHANICAL STORAGE DEVICE

Robert W. Grace, Sandusky, Ohio, assignors to Jervic B. Webb Company

Filed Oct. 6, 1970, Ser. No. 78,363
Int. Cl. B66f *7/22*
U.S. Cl. 214—674 **10 Claims**



A mechanical storage device for loading and unloading storage racks consisting of lower and upper trucks which travel along vertically spaced rails, and a mast connected between the trucks. A carriage with a laterally shiftable load table is vertically movable in a path defined by guides on the mast, and the horizontal attitude of the carriage is independently controlled by chains cross-connected between the trucks and trained about pairs of sprockets on the carriage. Vertical movement of the carriage is obtained by a hoist unit mounted on the carriage and driving one or more of the sprockets so that the carriage moves along the chains. The vertical attitude of the mast is adjustable to align the device with storage rack structure.

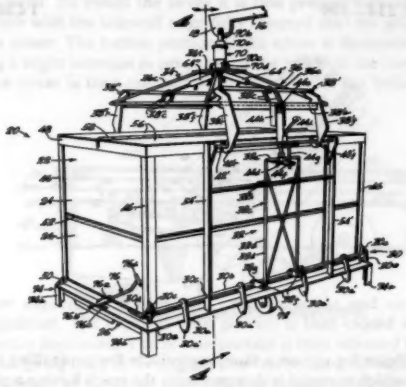
3,719,296

LOAD HANDLING CONTAINER APPARATUS

Eric M. Larson, Jr., 1205 Andora, Coral Gables, Fla.

Filed Sept. 25, 1970, Ser. No. 75,633
Int. Cl. B66f *9/00*
U.S. Cl. 214—315 **6 Claims**

Load handling apparatus particularly operative in a municipality trash collecting operation, servicing domestic and/or industrial sectors of a community. The load handling apparatus, in trash or waste collecting form, includes a plurality of trash containers adapted to be positioned each at a strategic trash pick-up location. Each of the containers are provided with drop bottom wall means and spring-loaded dog



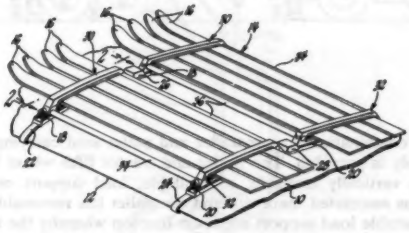
latch means releasably holding the drop bottom wall in closed configuration. The load handling apparatus may include also a portable crane unit and container lifting grapple means dependingly supported on the boom means of the crane unit.

3,719,297

VEHICLE ROOF SKI RACK

Ronald J. Nowicki, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 27, 1970, Ser. No. 93,233
Int. Cl. B60r *9/00*
U.S. Cl. 214—450 **2 Claims**



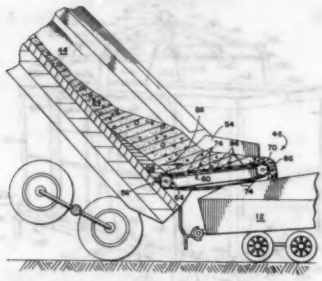
A vehicle roof ski rack includes front and rear ski clamp assemblies mounted on a vehicle roof for lateral outboard movement from a storage position, generally above the roof, to a loading position allowing convenient access to the clamp assemblies. The clamp assemblies include respective clamp members that are spring biased toward unclamped positions and pivotally movable to ski clamping positions in which first latch members respectively secure the clamp members. Second latch members respectively hold the clamp assemblies in the storage position and a key releasably controlled actuating member, that extends longitudinally between the clamp assemblies, is rotatably actuated to move the first and second latch members to respective unlatched positions to simultaneously allow movement of the clamp members to the unclamped positions and movement of the clamp assemblies to the loading position.

3,719,298

DUMPING RATE CONTROLLING TAILGATE FOR A DUMP VEHICLE

Thelma Burnice Brown, 1717 So. Willis, Abilene, Tex.

Filed Sept. 25, 1970, Ser. No. 75,551
Int. Cl. B60p *1/36*
U.S. Cl. 214—509 **1 Claim**



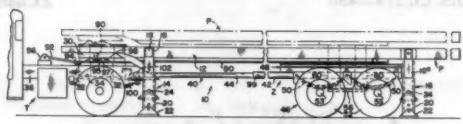
A tailgate for use on a dumping vehicle for controlling the rate at which material is dumped from the truck having a plurality of material engaging members which discharge material over the tailgate at a desired rate by controlling the rate of movement of the material engaging means.

3,719,299

PALLET TYPE LOAD TRANSPORT APPARATUS

Carl W. Oehler, 1664 S.E. 4th Court, Deerfield Beach, Fla.

Filed Aug. 5, 1970, Ser. No. 61,228
Int. Cl. B60p *1/64*
U.S. Cl. 214—515 **12 Claims**



A combination tractor-trailer and pallet load carrying assembly is provided. The trailer and tractor fifth wheel both have vertically movable, controllable, load support or lift means associated therewith and the pallet has removable or retractable load support members thereon whereby the tractor-trailer can be moved under the pallet, the lifting device raised, and the pallet lifted for load transport action. The trailer is of a center pole type and is pivotally connected to the tractor.

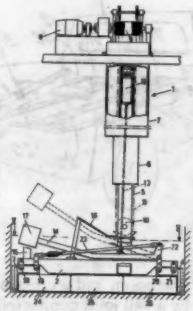
3,719,300

HOISTING APPARATUS, MORE PARTICULARLY FOR USE IN A FURNACE

Frederik Willem Siegmund, Bilthoven, Netherlands, assignor to N.V. Nederlandse Kraanbouw Mij., Utrecht, Netherlands

Filed Dec. 28, 1970, Ser. No. 101,994
Claims priority, application Netherlands, Jan. 20, 1970, 7000804
Int. Cl. B66c *1/42*
U.S. Cl. 214—658 **6 Claims**

The invention relates to a hoisting apparatus having a yoke, at least two clamping members which are disposed on the end portions of the yoke, and can be moved towards and away from one another, means for driving and controlling the clamping members, and members for moving the yoke, in which the clamping members make only a very small displacement when they move from the clamping position into the release position, whereby at least one of the clamping members is so guided that it is displaced parallel with itself during the movement of the clamping members in relation to one another.

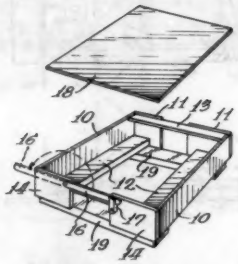


3,719,301

GREENHOUSE PLANTING BOX

Eugene A. Boppart, Woodstock, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Sept. 11, 1970, Ser. No. 71,537
Int. Cl. B65d *9/06*
U.S. Cl. 217—5 R **3 Claims**



A greenhouse planting box composed of an upwardly open frame, a base construction and a planting board removably supported on the base. The board is adapted to support individual pots and the pots can be lifted on the board whereby they can be removed individually or as a whole. The planting box is formed with hand access openings in an opposed pair of walls for permitting grasping and lifting of the planting board.

3,719,302

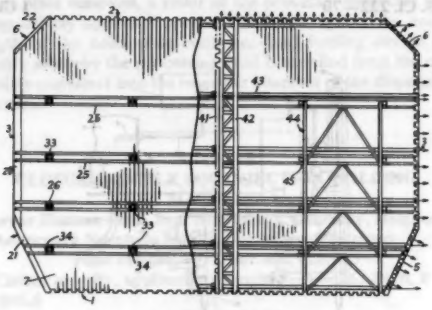
STORAGE CONTAINERS FOR LIQUIDS

William Hamilton, Mill Brae, Old Guildford Road, Frimly Green, Camberley, England

Filed May 17, 1971, Ser. No. 143,965
Claims priority, application Great Britain, May 20, 1970, 24,494/70; Jan. 22, 1971, 2,992/71
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 LG **15 Claims**

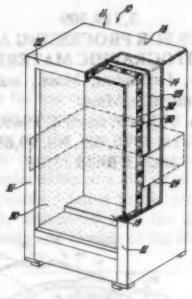
A thermally insulated container for liquefied natural gas is constructed in a ship and has corrugated walls. The corrugations in the bottom, side and top walls extend longitudinally of

the ship while those in the end walls extend vertically. The side and top walls are supported from the ship's structure by sliding connections, while the end walls are interconnected by tie-rods. Thermal contraction of the walls on filling the container is accommodated by a reduction in the length of the tank in



the length direction of the corrugations and by deformation of the corrugated walls transversely of the corrugations. Vertical contraction and expansion of the end walls is accommodated by elastic deformation of the top wall which is left unsupported in the regions adjacent the end walls.

3,719,303
REFRIGERATOR CABINET CONSTRUCTION FOR RELEASING FOAM INSULATION
Paul E. Kronenberger, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 1, 1971, Ser. No. 194,294
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 F **2 Claims**



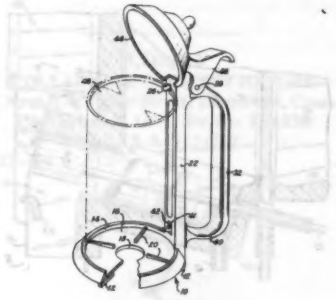
A refrigerator cabinet having an outer metal shell, a plastic inner liner, and foamed-in-place insulation therebetween together with the application of a foam insulation release agent coextensive with the inner surface of the metal shell except for a single horizontal adherence seam devoid of the release agent on both sides and the rear wall of the shell to produce a cabinet capable of maintaining interior dimensions while allowing for differences in coefficients of thermal expansions between the liner and shell.

3,719,304
CONTAINER AND COVER THEREFOR
Douglas C. Pressnell, 11878 Hamden Drive, Cincinnati, Ohio
Filed Sept. 28, 1970, Ser. No. 76,658
Int. Cl. B65d *41/00*
U.S. Cl. 220—42 C **1 Claim**

A cover and container combination with the container having upstanding sidewalls terminating at an upper edge portion. The cover has a groove formed in the bottom face thereof which is adapted to receive the upper edge portion of the container sidewall. The cover further includes a panel portion, a centrally located button portion and a hinge portion connecting the button portion to the panel portion. The button portion is biased upwardly by the inherent resiliency of the cover material. To install the cover it is first pressed onto the container with the sidewall edge fully inserted into the groove on the cover. The button portion of the cover is depressed causing a slight increase in pressure on the inside of the container. The cover is then cracked open slightly with the button por-

tion depressed to allow the pressure inside and out to be equalized. The cracked open portion is then closed with the button depressed. The button portion is then released to allow it to spring back to its original position because of the inherent resiliency of the cover material. The upward movement of the button portion will cause a slight increase in the internal volume of the container which in turn will cause a slight decrease in the pressure inside the container. This pressure differential will tend to force the cover into its installed position to thereby provide a reasonably tight hermetic seal between the cover and container.

3,719,305
CONTAINER HOLDER
Douglas C. Pressnell, 11878 Hamden Drive, Cincinnati, Ohio
Filed July 2, 1971, Ser. No. 159,423
Int. Cl. B65d *25/00*
U.S. Cl. 220—85 H **6 Claims**



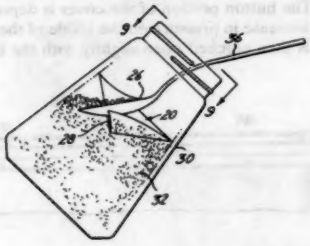
A holder for holding a beverage can in such a manner that one may use the holder as a stein in drinking the beverage from the can. The holder includes a dish for supporting the can, a post extending upwardly of the dish, a handle pivoted to the top of the post and a bar slidably mounted for inward-outward movement in the top of the post. A latch is provided at the bottom of the handle that, when the handle is swung downwardly, extends through a slot on the post and bears against the can to restrain the can against movement on the dish. A connection is provided between the handle and the bar that is so constructed as to move the bar inwardly over the top of the can when the handle is swung downwardly to also restrain the can against movement on the dish.

3,719,306

COVER FOR MAINTAINING FRESHNESS OF COFFEE

Tobias G. Holtzman, 69 Garden Street, Passaic, N.J.

Filed Jan. 11, 1971, Ser. No. 105,194
Int. Cl. B65d *25/00*
U.S. Cl. 220—93 3 Claims



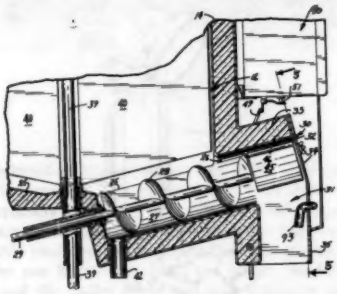
A cover is provided for use in combination with a receptacle for coffee. The cover is utilizable in a receptacle having a circular, horizontal cross-section and rests on the top of the surface of the coffee in the receptacle. The cover comprises a circular disc having a radially extending slit which extends from the center of the disc to the periphery thereof to enable an overlapping of the portions of the disc on opposite sides of the slit but adjacent thereto. The disc has a larger diameter than the diameter of the bore of the bottle so that the periphery of the disc bears against the inner surface of the receptacle to protect the coffee from exposure to air.

3,719,307

ICE DISPENSING DEVICE

Arthur G. Larson, Mound, Minn., assignor to McQuay, Inc., Minneapolis, Minn.

Filed Oct. 6, 1970, Ser. No. 78,460
Int. Cl. G01f *11/20*
U.S. Cl. 222—236 10 Claims



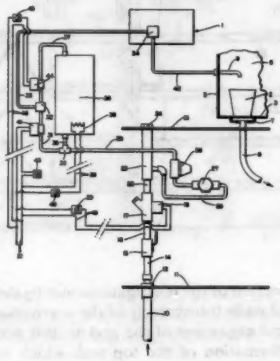
A reservoir having an inlet end and an outlet is disposed in a housing to receive ice from a chipped ice manufacturing device at its inlet end. A chamber is formed exteriorly of the reservoir at the outlet thereof, and a power operated conveyor is positioned within the lower end of the reservoir to deliver chipped ice from the reservoir to the chamber. Electrically operated controls are connected to terminate operation of the power operated conveyor responsive to a predetermined operation of the conveyor to dispense a desired amount of chipped ice, and a vane pivotally connected to the conveyor is disposed within the chamber to sweep therethrough during operation of the conveyor and positively displace and dispense ice within the chamber laterally outwardly through an opening formed in the lowermost portion of the side wall of the chamber during operation of the conveyor.

3,719,308

DENTAL DRINKING CUP FILLING APPARATUS

Dean H. Buchtel; Kenneth R. Lappin, and John A. Maurer, all of Canton, Ohio, assignors to The Weber Dental Manufacturing Company, Canton, Ohio

Filed Oct. 26, 1970, Ser. No. 83,897
Int. Cl. B67d *5/34, 5/62*
U.S. Cl. 222—70 1 Claim



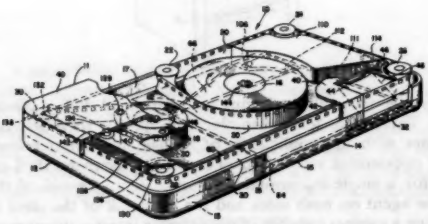
A filling apparatus for a drinking cup for a dental unit which enables the cup to be filled automatically with a desired predetermined amount of cold water by pressing a control button. Hot water may be mixed with the cold water to temper the cold water during the automatic filling by pressing a second hot water button and holding the same for the time necessary to add and mix the desired amount of hot water. Alternately, the hot water button may be pressed to discharge a desired amount of hot water only into the cup.

3,719,309

APPARATUS FOR PROCESSING A STRIP OF PHOTOGRAPHIC MATERIAL

Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 813,469, April 4, 1969. This application Dec. 18, 1970, Ser. No. 99,692
Int. Cl. B65d *35/28*
U.S. Cl. 222—101 9 Claims



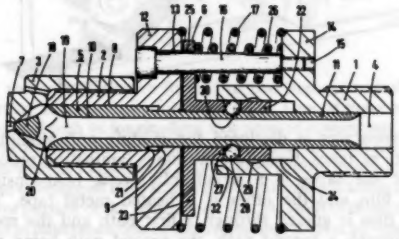
A motion picture film processing system employing a dispensing container having an applicator through which processing fluid may be expressed onto a strip of exposed photographic material as the strip of material is drawn thereacross. Processing fluid is initially stored in a collapsible container having a weakened portion adapted to rupture responsive to a predetermined compressive force. A fluid feeding device communicates with a reservoir chamber of the dispensing container through an exit orifice provided in one of its walls and also has an entrance port connected to the weakened portion of the collapsible container. The reservoir

chamber is at least equal in capacity to the collapsible container. This system can advantageously be employed in a compact multipurpose film handling cassette, having a removable cover plate adjacent the collapsible container-fluid feeding device, which is adapted to be mounted both within a camera and a unique processor-projector unit. With the aforesaid cover plate removed, a roller of the processor-projector unit progressively applies a compressive force against the entire length of the collapsible container-fluid feeding device assembly whereby the processing fluid is expelled from the collapsible container into the reservoir chamber of the dispensing container.

3,719,310
CLOSURE NOZZLE FOR INJECTION MOLDING MACHINES

Werner Hunten, Stein, near Nuremberg, Germany, assignor to Ankerwerk Nurnberg GmbH, Nuremberg, Germany

Filed Feb. 24, 1971, Ser. No. 118,423
Claims priority, application Germany, Feb. 26, 1970, P 20 09 006.6
Int. Cl. B29f *1/03*
U.S. Cl. 222—497 **11 Claims**



A closure nozzle for use on an injection moulding machine comprising a nozzle carrier adapted for connection to the plasticizing cylinder of the machine, a nozzle arranged displaceably relative to the nozzle carrier, a spring loaded closure element axially displaceable in a co- axial bore in the nozzle carrier and displaceable relative to the nozzle, and a locking element operatively associated with the closure element for the controlled opening and closing of the closure element.

3,719,311
PRESSING APPARATUS AND METHOD

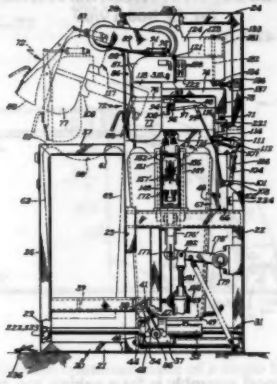
Dan B. Remiarz, Brooklyn Center, Minn., assignor to The Unipress Company, Inc., Minneapolis, Minn.

Filed March 4, 1971, Ser. No. 121,027
Int. Cl. D06c *5/00, 15/00*
U.S. Cl. 223—73 **36 Claims**

A pressing apparatus is disclosed in which a garment support is movable between two horizontally-displaced positions, i.e. a dressing position in which a garment is initially placed on the support and later removed from it, and a pressing position in which the garment is supported for pressing engagement by one or more movable pressing plates. The pressing plates are movable between retracted and pressing positions, and preferably also to an intermediate steaming position.

The movable garment support includes an upwardly extending center buck having sides against which the downwardly extending legs of a garment are adapted to be initially dressed and then pressed, in combination with a garment waist support mounted above the center buck for relative movement between an upper loading position and a lower dressing and pressing position. The device further includes a plurality of safety means effective both individually and in combination to insure the desired sequence of movement of the various parts, and such safety means may also include timing or sequence control means for automatically controlling certain portions of a pressing, steaming or other treatment cycle. Selective presteaming controls are provided.

The garment waist support preferably includes improved features for convenient mounting of a garment waist portion in a manner which facilitates suitable alignment of the desired



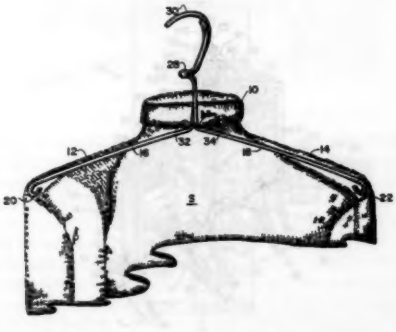
front crease locations of such a garment with the front edges of two laterally-spaced buck portions which form part of the garment support. The waist support also includes movable seat wings for smoother dressing of the garment. The seat wings retract during steaming and pressing.

Improved cuff holders on the garment support hold the garment during dressing and movement to pressing position, but retract at the start of steaming. An improved supporting and alignment mechanism for a movable pressing plate is also disclosed.

3,719,312
COLLAPSIBLE GARMENT HANGER

Charles F. Krut, 170 Taylor Street, Talcottville, Conn.

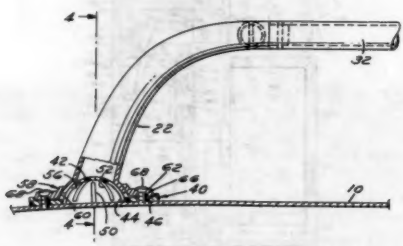
Filed March 4, 1971, Ser. No. 120,936
Int. Cl. A47j *51/10*
U.S. Cl. 223—94 **3 Claims**



The device disclosed comprises a two piece garment hanger fabricated from steel wire and collapsible so as to be readily inserted in the neck opening of a turtle neck sweater or the

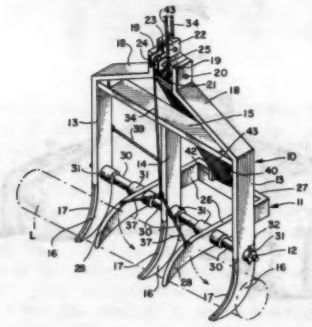
like. A first wire is pivotally connected to a second wire by a rivet, which rivet is so located with respect to these wires so that the hanger can be opened to support a garment in a conventional fashion or can be collapsed so as to permit insertion or removal of the hanger through the relatively small neck opening in a turtle neck sweater or the like.

3,719,313
CAR TOP LUGGAGE CARRIER
Ludwig J. Tischler, Huntington Woods, Mich., assignor to F. L. Jacobs Co., Southfield, Mich.
Filed July 27, 1971, Ser. No. 166,483
Int. Cl. B60m *9/00*
U.S. Cl. 224—42.1 D **12 Claims**



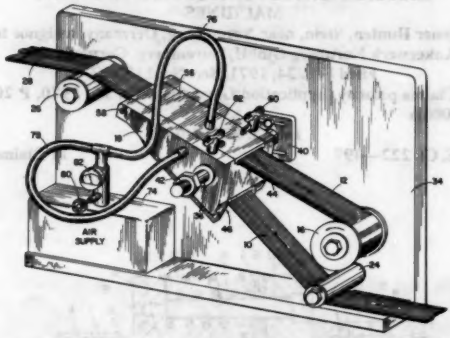
The rail support assembly is for a vehicle top carrier where four or more rail support assemblies are mounted on the roof of a vehicle, with rails extending between adjacent assemblies to complete the carrier. Each rail support assembly comprises: a one piece resilient base which is adapted to conform to the curvature of the vehicle roof and is provided with a spherical section forming a dome; an upstanding tubular element having a spherical socket on one end seated on the dome; a locating plate having a spherical rim surrounding and engaging the socket on the tubular element, with the locating plate overlying flanges provided on the resilient base; and fastening means extending through the flanges and plate to secure the support assembly to the vehicle roof.

3,719,314
APPARATUS FOR BREAKING WOOD WASTE INTO SHORT PIECES
Ernest P. Cox, P.O. Box 154, Lolo, Mont.
Filed Aug. 9, 1971, Ser. No. 170,042
Int. Cl. B26f *3/00*
U.S. Cl. 225—97 **10 Claims**



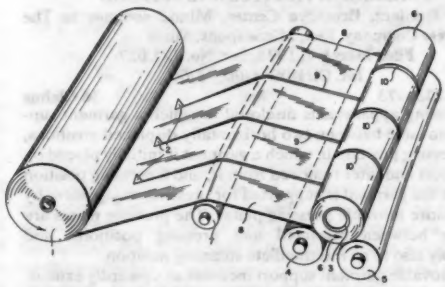
A heavy duty pivoted jaw wood breaking unit is adapted to be positioned and operated by a cable operated or hydraulically operated shovel or another form of logging machine. The apparatus breaks logging slash, tree tops, limbs and other windfalls into short sections which can be buried and scattered to substantially reduce the danger of fire. The broken material will also decompose faster than the usual large logs.

3,719,315
TAPE ALIGNING DEVICE
Bretislav Paul Zuber, Montreal, Quebec, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed Apr. 10, 1972, Ser. No. 242,646
Int. Cl. B65h *23/26*
U.S. Cl. 226—19 **7 Claims**



An apparatus is disclosed for guiding and aligning a plurality of tapes during a continuous laminating process. One of the tapes is a structurally weak heat-sensitive plastic film and the other is a heated metal tape. The plastic film is guided through a first path and the metal tape through a second path, the second path being prealigned with and converging towards the first path. Means are provided to support the plastic film on a frictionless air cushion and means are provided to allow the apparatus limited lateral movement to maintain both tapes perfectly aligned one above the other.

3,719,316
WEB SPREADER ELEMENT
Kenneth G. Frye, Downingtown, Pa., assignor to Beloit Corporation, Beloit, Wis.
Filed Apr. 22, 1971, Ser. No. 136,378
Int. Cl. B65h *23/32*
U.S. Cl. 226—199 **3 Claims**



A spreader element which is useful to spread a web includes an adjustably bowable shaft and a cylindrical, non-rotatable outer surface about the bowable shaft.

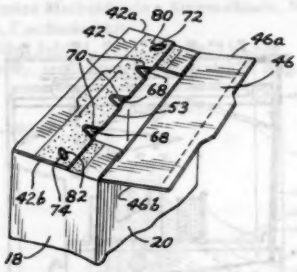
According to the present invention, the outer cylindrical surface is made up of a plurality of separate cylindrical segments axially aligned along the shaft each segment being non-rotatable relative to the member.

3,719,317

EASILY OPENABLE CARTON WITH ELONGATED ADHERENCE AREAS NEAR THE SIDE EDGES OF THE OVERLAPPED FLAP

William A. Brastad, Minneapolis, Minn., assignor to General Mills, Inc.

Filed May 4, 1970, Ser. No. 34,194
Int. Cl. B65d *5/54*
U.S. Cl. 229—51 WB **2 Claims**



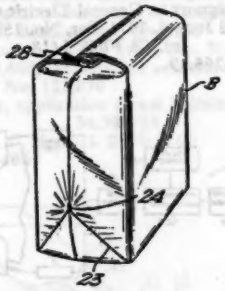
A carton end closure formed of two flaps adhesively held together at a number of distinct areas. One of these areas is elongated with its longitudinal axis pointed toward one corner of the overlapped flap. Another of these areas is also elongated with its longitudinal axis pointed toward another corner of the overlapped flap. Another of these areas is located in the center portion of the overlapped flap. At each of these distinct areas of adherence one of the overlapped flaps is embossed.

3,719,318

THERMOPLASTIC BAG

Harry Hamilton Moran, 2965 Casco Point Road, Wayzata, Minn.

Division of Ser. No. 841,670, June 25, 1969, Pat. No. 3,534,520, which is a continuation of Ser. No. 590,417, Oct. 28, 1966, abandoned. This application Oct. 19, 1970, Ser. No. 82,012
Int. Cl. B65d *33/30*
U.S. Cl. 229—58 **9 Claims**



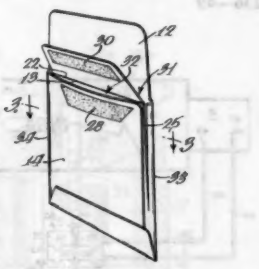
A thermoplastic bag is formed from a sheet of thermoplastic material which is folded and tucked to form a bottom gusset. The bottom gusset portion is sealed at opposite corners with an inverted V-shaped seal, and the sheet forming the partially formed bag is severed with a severing and welding medium along a line bisecting the V-shaped seal to form a bag which has a generally squared bottom. A plastic covered tin-tie fastener is secured to the face of a bag panel. When the bag is filled and closed, the ends of the tin-tie are bent upon itself and these bent ends are further bent upon themselves and tucked interiorly of the folded tucked side portions of the bag.

3,719,319

ENVELOPE-LIKE CONTAINER

Carl W. Schleutermann, Harwood Heights, Ill., and Herman L. Lewis, Jr., Malibu, Calif., assignors to Arvey Corporation

Filed Sept. 30, 1970, Ser. No. 76,853
Int. Cl. B65d *27/08*
U.S. Cl. 229—72 **6 Claims**



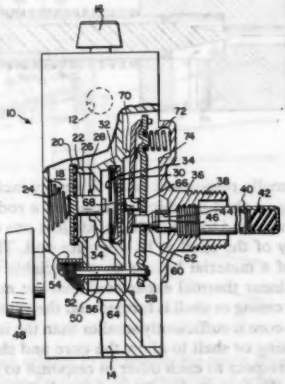
An envelope-like container made of a single blank comprising an open top pocket for papers such as a bank book, checks, currency, and a deposit slip. The open top pocket is slit in one wall thereof to allow access to the interior of the pocket. The container may also have a pocket for coins that can be sealed after the coins are inserted. The container is particularly designed for use by depositors at drive-in banks and makes it easy for the teller to handle deposits without fear that the contents will slide out and be lost.

3,719,320

MOTION REVERSING LEVER MECHANISM FOR A THERMOSTATIC CONTROL LEVER

Louis P. Morris, Garden Grove, and Theodore J. Dykzeul, Rolling Hills, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

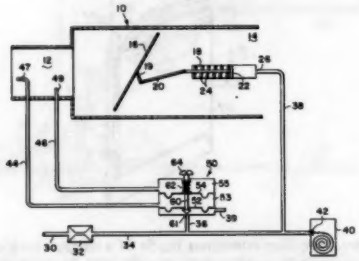
Filed Feb. 23, 1971, Ser. No. 118,013
Int. Cl. F16k *31/56*
U.S. Cl. 236—48 **6 Claims**



A motion reversing lever mechanism disposed between a valve assembly and a thermally responsive element in a ther-

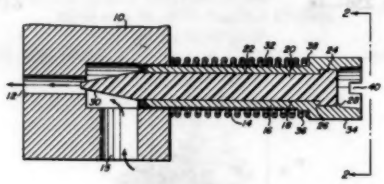
mostatic control device and including an actuating lever fulcrumed at one end and engaging the valve assembly at an intermediate point, and an intermediately fulcrumed supplemental lever engaging the thermally responsive element at one end and the actuating lever at its other end such that movement of the thermally responsive element in one direction is transmitted by the levers to the valve assembly for moving the same in an opposite direction.

3,719,321
AIR FLOW CONTROL DEVICE
John C. McNabney, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.
Filed May 20, 1971, Ser. No. 145,167
Int. Cl. G05d *7/01, 23/12*
U.S. Cl. 236—49 **10 Claims**



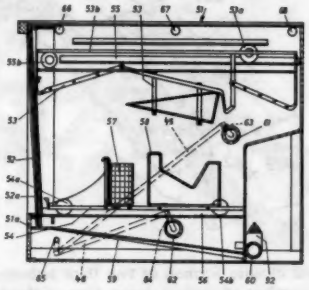
Pneumatically operated air flow control devices for use in a variable air volume conditioning system, wherein air volume rate is normally controlled by temperature responsive means, and including pressure responsive means to override the temperature responsive means under prescribed conditions.

3,719,322
THERMALLY RESPONSIVE VALVE ASSEMBLY
Robert T. Gifford, Yellow Springs, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio
Filed April 8, 1971, Ser. No. 132,494
Int. Cl. G05d *23/02*
U.S. Cl. 236—102 **9 Claims**



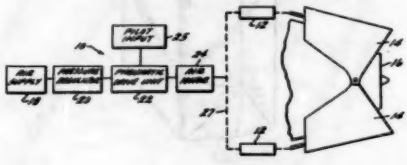
A thermally responsive valve assembly includes a cylindrical casing or shell in which is mounted a rod-like valve core which is attached to the casing or shell at one end and extends outwardly of the shell at its opposite end. The valve core is formed of a material having an appreciable different coefficient of linear thermal expansion than the material of which the outer casing or shell is formed and the external diameter of the valve core is sufficiently smaller than the internal diameter of the casing or shell to allow the core and shell to move axially with respect to each other in response to changes in temperature. The external surface of the shell is threaded so that the complete valve assembly may be threaded into position with the outwardly extending portion of the valve core located within a port through which the fluid flow is to be regulated. The initial setting of the valve core with respect to the port is adjusted by threading the shell into the wall of the member in which the port is formed, and thereafter, changes in temperature will cause the effective area of the port to be varied as either the valve member or the casing expands and contracts in response to temperature changes.

3,719,323
AUTOMATIC DISH WASHING MACHINE
Walter Raiser, Lange-Gasse 24, Basel, Switzerland
Filed June 14, 1971, Ser. No. 152,554
Claims priority, application Germany, Jan. 20, 1971, P 21 02 572.9
Int. Cl. B08f *3/00*
U.S. Cl. 239—264 **7 Claims**



The specification discloses an automatic dish washing machine having a washing chamber of approximately rectangular cross section closable by means of a door, a circulating pump and heating means for the water to be sprayed into the washing chamber. The circulating pump is disposed next to the washing chamber on the side remote from the door and in the washing chamber two nozzle tubes lying parallel to one another and pivotable about their longitudinal axes are connected via pipes to the circulating pump and are, further, accommodated via links to a driving unit disposed outside the washing chamber. One pipe is disposed in the washing chamber near the top, or bottom, and the other at about mid height of the chamber. Fixed nozzle pipes can also be included in the washing chamber.

3,719,324
VELOCITY SENSOR FEEDBACK MECHANISM FOR THRUST REVERSER ACTUATING SYSTEM
Donald E. Uehling and Stephen B. Tucker, Cincinnati, Ohio, assignors to General Electric Company
Filed June 4, 1971, Ser. No. 150,089
Int. Cl. F02k *1/18*
U.S. Cl. 239—265.19 **8 Claims**



A control system for stowing and deploying a movable load member, such as a gas turbine engine thrust reverser door, is described as including a velocity sensor feedback loop which both protects the load member and assures complete deployment thereof. The velocity sensor comprises a piston and chamber positioned so that the piston

comes into contact with the load member as it nears an extreme position of movement. As the piston is engaged, a pressure builds up in the chamber which is a function of the velocity of the load member. This pressure forms an input to a servomechanism which controls the velocity of the load member. The system is provided with means for venting the piston chamber as the load member comes to rest to assure that the load member is maintained in its final position by the servomechanism.

3,719,325

NOZZLE FOR A PNEUMATIC-HYDRAULIC HEAD FOR CLEANING OF MOLDS FOR PRESSURE CASTING OF METAL

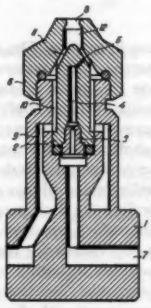
Alexander Cerva, Nove Mesto nad Vahom, and Milan Tomasovic, Bzince p.J., both of Czechoslovakia, assignors to Vyskumny ustav Mechanizacie a Automatizacie, Nove Mesto nad Vahom, Czechoslovakia

Filed July 21, 1971, Ser. No. 164,578

Claims priority, application Czechoslovakia, Aug. 14, 1970, 5644-70

Int. Cl. B05b *7/10*

U.S. Cl. 239—405 **4 Claims**



A nozzle for a pneumatic-hydraulic head for cleaning molds for pressure casting of metal, having independent supplies of pressurized air and separating material. The nozzle has a chamber and spiral shaped mixing channels creating in the chamber prior to the discharge through the nozzle spout a vortex in the pressurized air. A transfer channel is also provided connected to the supply of the liquid separating material terminating into one of the mixing channels.

3,719,326

LIQUID ATOMIZING DEVICES

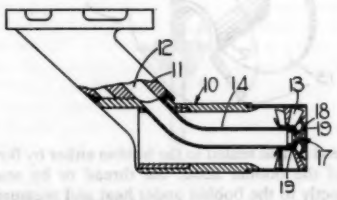
Harold Place, Accrington, and Alan Gillingham Cheshire, Burnley, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Original application July 8, 1969, Ser. No. 839,902, now Patent No. 3,608,831. Divided and this application Feb. 5, 1971, Ser. No. 112,870

Claims priority, application Great Britain, July 18, 1968, 34,308/68

Int. Cl. B05b *7/00*

U.S. Cl. 239—406 **5 Claims**



A liquid atomizing device, particularly intended for use in the burner of a gas turbine engine, has a tubular body through which air can flow to a swirler formed by vanes at the downstream end of the body. A fluid passage is defined by a tube within the body and a downstream end wall of the passage includes an external concave annular flange and a plurality of holes through which fuel can pass from the passage to impinge on the flange and thereby be directed into the swirling airstream downstream of the blades.

3,719,327

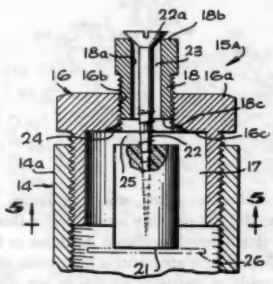
DRIP IRRIGATION NOZZLE

Walter C. McMahan, Escondido, Calif., assignor to McMahan Brothers Mfg. Co., Inc., Escondido, Calif.

Filed Aug. 13, 1971, Ser. No. 171,498

Int. Cl. B05b *1/30*

U.S. Cl. 239—454 **19 Claims**



A drip irrigation nozzle having pressure regulating and self-cleaning characteristics. The nozzle includes a resilient closure member which in a flow limiting position partially blocks the nozzle metering orifice in proportion to the pressure of the supplied fluid. The nozzle discharge or "drip" rate thus is substantially independent of fluid supply pressure. When the irrigation fluid is turned on or off, the transient burst of fluid past the closure member cleans debris from the nozzle.

3,719,328

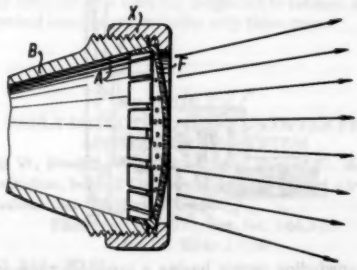
ADJUSTABLE SPRAY HEAD

Clyde V. Hindman, 1385 East Ave., Morgantown, W. Va.

Filed Oct. 22, 1970, Ser. No. 83,114

Int. Cl. B05b *15/00*

U.S. Cl. 239—546 **6 Claims**



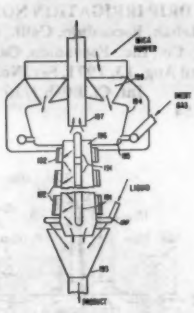
This disclosure relates to an adjustable spray head having a resilient face plate formed with a plurality of spray apertures therein. The face plate has an annular flange which cooperates with a tapered surface on the spray head body for flexing the face plate and thereby selectively changing the angular relationship of the apertures and thus the spray pattern.

3,719,329

ULTRADISINTEGRATION AND AGGLOMERATION OF MINERALS SUCH AS MICA, PRODUCTS THEREFROM AND APPARATUS THEREFOR

Josef Ruzicka, 55-25 98th Place, Rego Park, N.Y.

Division of Ser. No. 650,543, June 30, 1967, Pat. No. 3,608,835. This application Aug. 5, 1970, Ser. No. 61,518
Int. Cl. B02c 19/00
U.S. Cl. 241—4 9 Claims



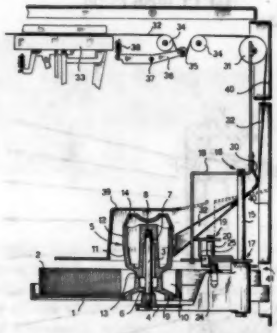
Frangible or cleavable solids, such as mica, are disintegrated in oriented, high-velocity streams of a fluid medium so as to produce thin smooth-surfaced particles or flakes having a high specific surface area and a high ratio of length to thickness. The resulting particles or flakes are useful as agglomerants, fillers or pigments or can be agglomerated to form paper-like webs or solid discs or articles of other predetermined configurations, with or without added binder, either in self-supporting form or adhered to a substrate. Various methods and apparatus for such disintegration are disclosed.

3,719,330

PUNCHED-TAPE UNWINDING DEVICE

Ezio Dell Antonio, and Quinto Tarizzo, both of Turin, Italy, assignors to Ing. C. Olivetti L.C., S.p.A., Ivrea, Italy

Filed Jan. 19, 1971, Ser. No. 107,717
Claims priority, application Italy, Feb. 9, 1970, 67400 A/70
Int. Cl. B65h 17/48
U.S. Cl. 242—55.18 5 Claims



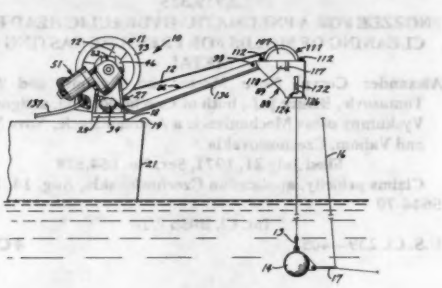
A tape unwinding device having a turntable supporting a reel of tape that has a central opening and is removed from the turntable by the innermost turn in said central opening at an angle to the turntable, and a turntable hub having an annular recess of height substantially equal to the tape width and a frusto-conical tape guide section above the recess. The minor diameter of the frusto-conical section is adjacent the recess, and its apex angle is substantially coincident with the exit angle formed by the innermost turn of tape with the turntable axis during exit in the absence of said hub.

3,719,331

DOWNRIGGER

Gerald J. Harsch, South Haven, Mich., assignor to Harsch Precision Engineering, South Haven, Mich.

Filed June 30, 1971, Ser. No. 158,252
Int. Cl. B65h 17/52
U.S. Cl. 242—106 14 Claims



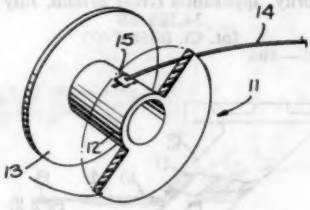
A downrigger for use in trolling. The downrigger has frame means releasably mounted on the watercraft. Shaft means are rotatably supported on the frame means and reel means are axially, slideably mounted on the shaft means and angularly fixed for rotation therewith. Drive means are provided and adapted to drive the shaft means for rotation to wind and unwind the line from the reel means. Brake means are provided which include an axially facing planar stationary surface on the frame means encircling the shaft means and an axially facing cooperating planar surface opposed to the stationary surface mounted on the reel means for rotation therewith. The brake means also includes actuating means for urging the cooperating surface in an axial direction into and out of an adjustable frictional engagement with the stationary surface for frictionally locking the reel means to the frame means under an adjustable amount of friction so that the tightness of the coupling between the stationary surface and the cooperating surface may be controlled and the coupling may be caused to slip when the line becomes snagged on an underwater object to thereby prevent the line from breaking.

3,719,332

METHOD OF SECURING A THREAD TO A BOBBIN AND A THREAD WOUND BOBBIN

Philippe Hardy-The McLain, Columbia, S.C., assignor to Soo Valley Company, Columbia, S.C.

Filed Oct. 6, 1970, Ser. No. 78,496
Int. Cl. B65h 75/28
U.S. Cl. 242—125.1 16 Claims



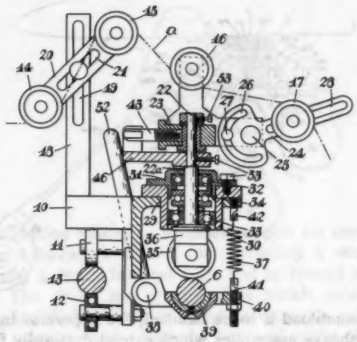
The thread is heat sealed to the bobbin either by flowing the material of the bobbin about the thread or by sealing the thread directly to the bobbin under heat and pressure. Either one of the thread or bobbin must be made of a thermoplastic material.

3,719,333

FEED MECHANISM FOR COIL WINDER

Iwao Kubo, 3-go, 14-ban, 4-chome, Ikegami, Ota-ku, Tokyo, Japan

Filed May 13, 1970, Ser. No. 36,838
Int. Cl. B65h *54/30*
U.S. Cl. 242—158.4 1 Claim



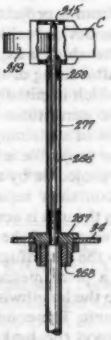
The present invention provides an improved seed mechanism of a coil winding machine having a roller with a sharp edge to contact with pressure a feed shaft which rotates at a constant speed. The roller is mounted at a lower end of a vertical shaft in a traveler which moves along an axis of the feed shaft. The vertical shaft is supported rotatably by the traveler and has a guide grooved pulley to guide a metallic wire. The roller moves on the feed shaft spirally together with directional deviation of the grooved pulley caused from a minute change of winding direction of the metallic wire on a bobbin owing to a natural habit of the metallic wire to be wound as the traveler moves gradually, such that when finishing the winding of layer a coil layer obliqueness of the roller is reversed in compliance with the natural habit of the metallic wire so as to reverse the moving direction of the traveler.

3,719,334

TAPE DRIVE CAPSTAN

Thomas W. Vail, Buffalo Grove, Ill., assignor to Warwick Electronics Inc.

Original application Nov. 21, 1968, Ser. No. 777,689, now Patent No. 3,677,555. Divided and this application Mar. 31, 1971, Ser. No. 129,763
Int. Cl. G03b *1/04*; G11b *15/32*
U.S. Cl. 242—181 6 Claims



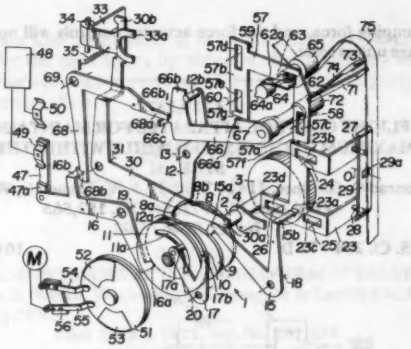
A tape drive capstan having a long capstan shaft threadable through a plurality of tape cassettes wherein a shroud surrounds the capstan shaft and has a bearing rotatably supporting said capstan shaft near an exposed end thereof and said shroud engages a cassette in playing position thereof to resist deflection of the capstan shaft by force applied by the coacting pressure roller.

3,719,335

AUTOMATIC FILM REWINDING DEVICE FOR SMALL MOVIE PROJECTORS

Makoto Kurasawa, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoli, Naka-magone, Ota-ku, Tokyo, Japan

Filed Dec. 1, 1970, Ser. No. 94,050
Claims priority, application Japan, Dec. 8, 1970, 45/98785
Int. Cl. B65h *63/04*, *25/00*
U.S. Cl. 242—186 8 Claims



An automatic film rewinding device for small movie projectors effects automatic rewinding of the film responsive to detection of tensioning of the film, wound on a supply reel, at the terminating stage of film supply, and is operable selectively to effect single-frame projection as well as projection of the film while the latter is moving in the rewinding direction. An externally accessible operating knob is operable to move a control cam group between forward film feed, neutral and reverse film feed positions, and a control lever group includes certain levers engaged with the control cam group and other levers operated by the cam engaging levers. The control lever group sets the components of the projector either to feed film forwardly or to rewind film and is locked in the forward feed film position and in the neutral position by a locking lever which is directly released by a member subjected to tension of the film. The control lever group includes only three cams.

3,719,336

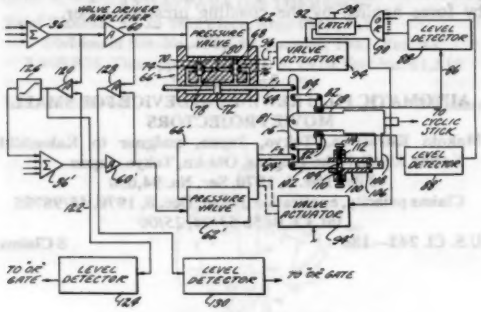
FAULT DETECTOR FOR HELICOPTER FEEL AUGMENTATION SYSTEM

Donald W. Fowler, West Haven, and Harold G. Heiney, Jr., Huntington, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 20, 1971, Ser. No. 146,573
Int. Cl. B64c *13/50*
U.S. Cl. 244—77 M 6 Claims

In a feel augmentation control system for high speed helicopters in which a force is applied to the cyclic stick in direct proportion to the load induced by movement of the stick, redundant force actuator controls responsive to sensed inputs are provided. If any unbalance in the electrical or mechanical properties of the redundant controls occurs, the force actuator controls in the feel augmentation system are

deactivated and a damping force is provided for the cyclic stick. The cyclic stick can be actuated by the pilot against the



damping force, and the force actuator controls will not reengage unless reset.

3,719,337

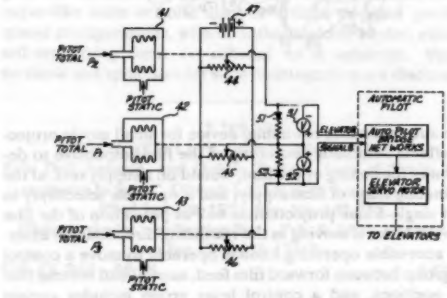
FLIGHT CONTROL APPARATUS FOR MAINTAINING MAXIMUM GROUND SPEED WHILE WITHIN THE JET STREAM

Conrad O. Gardner, 11424 236th Pl. S.W., Edmonds, Wash.

Filed June 14, 1971, Ser. No. 152,563

Int. Cl. B64c *15/00*

U.S. Cl. 244—77 D **10 Claims**



A system for maximizing ground speed utilizing jet stream air currents and/or providing guidance along the path of least resistance by processing of dynamic pressure information signals derived at spaced apart points of different altitude levels. Dynamic pressures are continuously compared and aircraft altitude control or altitude direction indicator means responsive to the compared pressures are utilized to cause changes in aircraft altitude or indicate the changes to be made to achieve maximum ground speed through a path of less resistance, or achieve increased comfort by avoiding paths adjacent large pressure differentials.

3,719,338

BOMBLOAD HANDLING APPARATUS

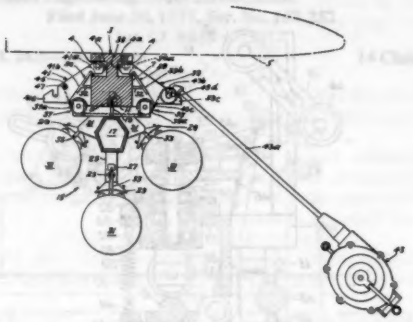
Joseph P. Ruggeri, Cherry Hill, N.J., assignor to The United States of America as represented by the secretary of the Navy

Filed Feb. 23, 1971, Ser. No. 117,898

Int. Cl. B64c *1/22*

U.S. Cl. 244—137 R **10 Claims**

Subject disclosure relates to novel and improved apparatus for loading and unloading a bombload ejection subassembly on an aircraft bombrack. When an asymmetric bombload is to be handled, the apparatus includes a sheave assembly which is secured to the bombload assembly such that its axis of rotation is positioned vertically above the center of gravity of the bombload assembly, an elongated support beam which is mounted on the bombrack, a single cantilever element which may be adjustably positioned on the beam and extends outwardly over the sheave assembly and a hoist mechanism which is cradled on the end of the cantilever element and controls a lifting cable which is reeved about the sheave assembly. When a sym-



metric bombload is to be handled, the apparatus includes a pair of sheave assemblies which extend outwardly from opposite sides of the bombload assembly, a pair of elongated support beams which are mounted on opposite sides of the bombrack, a pair of cantilever elements which are secured to the bombrack frame above the sheave assemblies, and a hoist mechanism.

3,719,339

DEVICE FOR A PROJECTILE

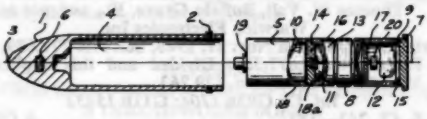
Bjorn Herman Olof Simmons, Karlskoga, and Lars Anders Birger Karsberg, Bofors, both of Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Feb. 9, 1971, Ser. No. 113,916

Claims priority, application Switzerland, Feb. 25, 1970, 2408/70

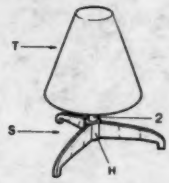
Int. Cl. F42b *13/32, 13/38*

U.S. Cl. 244—3.27 **12 Claims**



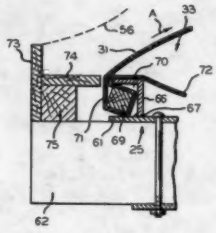
A device separable from a projectile arranged to be fired from a rifled barrel. The device includes a unit such as a flare supported by a parachute which is expelled from the projectile a predetermined time after firing of the projectile. The unit is placed in a container which is initially closed at one end by a bottom plate which also constitutes the bottom plate of the projectile and is capable of sustaining the powerful gas pressure generated when the projectile is fired. Upon expulsion of the container from the projectile by a suitable timing and expelling assembly, the container separates into several parts and a brake mounted on the unit is activated by the centrifugal force and causes a slowdown of the unit. The bottom plate which is also subject to the centrifugal force is pivotally connected to the unit by a pivot means which is eccentrically disposed with respect to the lengthwise center axis of the container and thus of the unit. The combined action of the centrifugal forces acting upon the brake and the bottom plate cause the latter to pivot into an angular position in which it is released from the pivot means and is thus ejected out of the linear path of the unit, thereby preventing collision with the same.

3,719,340
TREE STAND
Ian F. Norton, Toronto, Ontario, Canada, assignor to Noma Lites Canada Limited, Scarborough, Ontario, Canada
Filed Oct. 7, 1971, Ser. No. 187,387
Int. Cl. A45g 33/2
U.S. Cl. 248—48 5 Claims



This invention relates to a spider support for supporting a standard having a central hub including a receptacle therein and a fence integral with and in spaced relation thereto. The fence has spaced slots which receive removably installable anchors of spoke elements extending in radial relation to the hub; the hub and spoke elements co-operating to provide a rigid assembly.

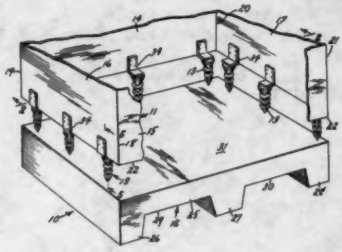
3,719,341
INFLATABLE FORM FOR CONCRETE BUILDING SHELL
Horrall Harrington, Pittsburgh, Pa., assignor to Ivan Himmel, Chicago, Ill., a part interest
Filed July 26, 1971, Ser. No. 165,478
Int. Cl. B28b 7/32
U.S. Cl. 249—65 10 Claims



An inflatable form for a concrete building shell comprising a frame including a plurality of support members defining the periphery of a concrete shell segment, a retainer affixed to one support member and affording a continuous channel facing outwardly of the support member, and a wood rail wrapped in one edge of an outer fabric layer for the inflatable form. The rail is dimensioned to fit easily into the channel in flat relation thereto, but is large enough to lock firmly into the channel upon inflation of the form. In a preferred embodiment, there is an auxiliary rail positioned within the channel, below the main rail and outside the fabric, held in place by a plurality of small wedges.

3,719,342
CLIP FOR RIGID FOAM PALLET
Julius B. Kupersmit, New York, N.Y. (145—80 228th St., Springfield Gardens, N.Y. 11413)
Filed Dec. 23, 1970, Ser. No. 101,005
Int. Cl. A44b 17/00, 21/00
U.S. Cl. 248—216 1 Claim

A clip for interconnecting the cardboard sides of a collapsible shipping container to a molded rigid foam pallet inwardly of the peripheral edges thereof. The clip includes a pair of planar side members having inwardly directed teeth for engaging the opposite sides of a cardboard panel, and a stepped pointed downwardly extending projection capable of penetrating the upper surface of said pallet and

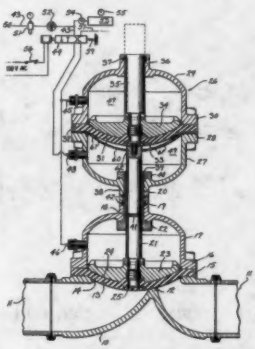


extending into the portions of relatively thick cross-section, whereby the rigid foam, by virtue of elastic memory may flow over the stepped surfaces of the projection to provide a retentive effect.

ERRATUM

For Class 249—65 see:
Patent No. 3,719,341

3,719,343
FLUID PRESSURE ACTUATED DIAPHRAGM VALVE
Bruno H. Werra, Waukesha, Wis., assignor to Ladish Co., Cudahy, Wis.
Filed April 8, 1971, Ser. No. 132,434
Int. Cl. F16k 7/12, 31/145
U.S. Cl. 251—61.1 11 Claims



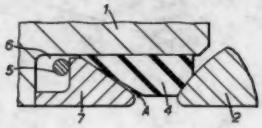
A diaphragm valve controlling the flow through a liquid pipe line includes a bonnet having a valve follower therein. An actuator stem has its lower end connected to said follower and has its upper end connected to a second follower movable in a superimposed actuator housing containing upper and lower chambers which are separated by a diaphragm, the latter having its upper surface engaged by said second follower. A control provides for simultaneous introduction of pressure into the valve bonnet and into the upper chamber of the superimposed housing to provide sufficient force to overcome the back pressure of the liquid in the pipe line to close the valve, or for alternative introduction of pressure fluid into the lower chamber only of the superimposed housing to open the valve.

3,719,344

BALL VALVE SEATING ASSEMBLIES

Gerald Cedric Jones, Hereford, and Herbert Bentley Leek, Upper Doluington, Hereford, both of England, assignors to Saunders Valve Company Limited, Monmouthshire, England

Filed Aug. 16, 1971, Ser. No. 171,898
Claims priority, application Great Britain, Aug. 26, 1970, 41,010/70
Int. Cl. F16k *11/04*
U.S. Cl. 251—174 4 Claims



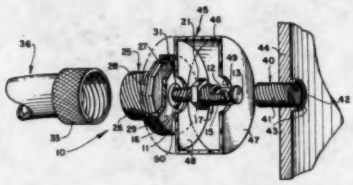
A ball valve of the type having a ball with a flow passage therethrough rotatably mounted in a bore in a valve casing in engagement with seating rings of extrudable material disposed on opposite sides of the ball and urged into sealing contact with the ball by spring-urged backing rings having conical surfaces confronting similar conical surfaces of the seating rings wherein the confronting conical surfaces of at least one of the co-operating backing and sealing ring pairs are so shaped as to be separated over a major part of their axial extent by a gap which tapers in a direction away from the ball.

3,719,345

DRAIN FITTING

James Earl Bridegum, 12143 Gothic Ave., Granada Hills, Calif. 91344

Filed May 10, 1971, Ser. No. 141,778
Int. Cl. F16k *31/50*
U.S. Cl. 251—351 3 Claims



A drain stem formed in its side wall with a port is coupled to a mounting sleeve structured for being mounted to a liquid container. A collar coupled to the drain stem can be moved to uncover the port and allow liquid to be drained from the container.

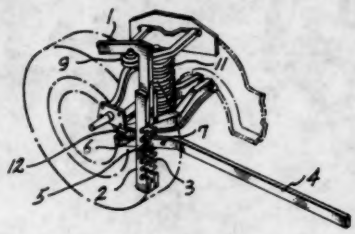
3,719,346

AUTOMOTIVE SUSPENSION BALL JOINT CHECKING METHOD

James P. Bohannon, Salinas, Calif., and Loyd O. McAfee, Seattle, Wash., assignors to said McAfee, by said Bohannon

Division of Ser. No. 768,418, Oct. 17, 1968, Pat. No. 3,612,485. This application Sept. 2, 1971, Ser. No. 177,314
Int. Cl. B66f *3/00*
U.S. Cl. 251—1 1 Claim

A hanger suspended by a hook from the upper control arm of an automotive wheel support carries a disengageable lever, the short end of which engages beneath the lower control arm. Downward swinging of the long arm of the lever will contract the tongs formed by the hook and short lever arm engaged with the upper and lower control arms and straddling the compression spring engaged between them. The fulcrum pin of the lever is engageable selectively with any set of socket notches



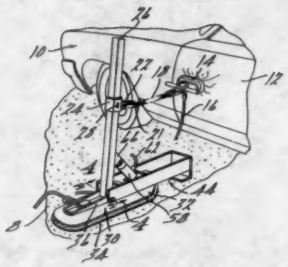
in furcations of the hanger for application to differently spaced control arms. Contraction of the tongs compresses the spring between the control arms to relieve the ball joints between the spindle support and the control arms from load so that the amount of backlash between the spindle support and the control arms can be checked.

3,719,347

VACUUM ANCHORED PULLING DEVICE

Raymond P. Wolgast, 3726 Kipling Rd., and Bertie Forrest Hall, Jr., 3568 Kipling Rd., both of Berkley, Mich., assignor to said Wolgast by said Hall

Filed Sept. 22, 1971, Ser. No. 182,718
Int. Cl. B66f *3/00*
U.S. Cl. 254—124 9 Claims



A pulling device used in automobile body repair work. A power operated post is pivoted on a vacuum anchor pad resting on a floor. The post is connected by a chain and a vacuum cup or the like to the part to be pulled. An extension leg on the anchor pad increases the pulling force which the device can exert without separation of the anchor pad from the floor.

3,719,348

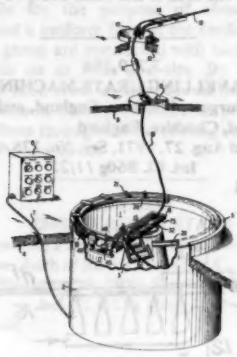
CABLE-HANDLING MACHINE

Herbert Arthur Wells, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Dec. 15, 1971, Ser. No. 208,127
Int. Cl. B65h *54/00*
U.S. Cl. 254—134.3 SC 14 Claims

An improved cable-handling machine for controlling the feeding of cable into and out of a stowage tank. The machine comprises a radial boom having one end rotatably mounted on the top of a core structure in the tank. The other end of the boom is suspended from a motor-

driven trolley having wheels which are supported on a flange of a circular beam attached to the rim of the tank. A cable carriage is slidably mounted on the boom and has a portion which projects outwardly and downwardly.



A separate radial drive system causes the carriage to travel back and forth along the boom for varying the radial distance between the core structure and the projecting portion of the carriage independently of the movement of the trolley.

3,719,349

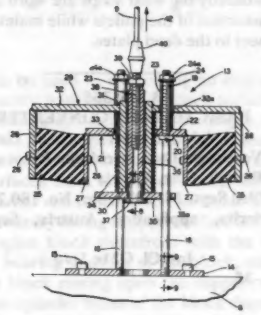
SHOCK ABSORBING CABLE CONNECTOR FOR PALLET LOADER HEAD

George K. Dulaney, Cazenovia, N.Y., assignor to Diebold, Incorporated, Canton, Ohio

Filed Sept. 15, 1971, Ser. No. 180,802

Int. Cl. B66d *5/00*

U.S. Cl. 254—135 R **12 Claims**



A connector construction for hoist or elevator cables which raise and lower a movable head such as a vacuum head of a pallet loader. The connector absorbs the shock encountered in lifting or lowering a load from a position at rest to full speed during only a few feet of movement of the head with its load. The connector for each cable has a number of interconnecting relatively movable members which support the load and through which lifting or lowering reactions are transmitted between cables and head. Usually four cables are connected to the head, one at each corner. The interconnected members include rubber block means through which the entire shock load is transmitted in shear from a member connected to a cable to one connected to the head. The connector also has spring means permitting relative movement between relatively movable connector members as the elevator motor comes up to speed for raising or lowering the head. The new shock absorbing connector reduces the shock load or impact at the start of a lowering operation, when the lift motor comes up to speed, to 0.91 G, and stops vibration of the head in a little over one second.

3,719,350

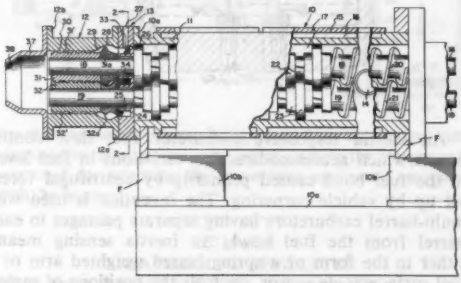
SELF-CLEANING VENTING SECTION FOR CONTINUOUS MIXERS

Bernard A. Loomans, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.

Filed March 22, 1971, Ser. No. 126,450

Int. Cl. B01f *7/04;* **B29b** *1/06, 3/00*

U.S. Cl. 259—6 **15 Claims**



A continuous mixer preferably of the twin-shaft type wherein axially parallel shafts extend through a mixer or reactor barrel and have radially extending mixing and kneading paddles thereon which wipe one another and the chamber walls substantially continuously during rotation. The mixer is provided with at least one vent hole for the removal of volatiles between the barrel inlet and outlet, and a member is provided on at least one of the shafts which moves material in a direction away from the vent hole as the shafts revolve.

3,719,351

EXTRUDER FOR THERMOPLASTIC OR NON-CROSS-LINKED ELASTOMERIC MATERIAL, A MIXING ZONE DEFINED BY A FEED SCREW

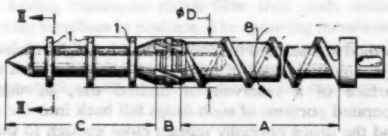
Hartmut Upmeier, Tecklenburg, Germany, assignor to Windmoller & Holscher, Lengerich/Westphalia, Germany

Filed May 4, 1971, Ser. No. 140,190

Claims priority, application Germany, May 15, 1970, P 20 23 910.5

Int. Cl. B01f *7/08*

U.S. Cl. 259—191 **7 Claims**



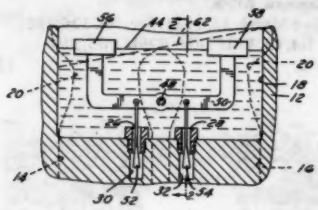
In an extruder for thermoplastic or non-cross-linked elastomeric material, a mixing zone defined by a feed screw for the material comprises at least one mixing ring on a cylindrical core portion of the screw, the mixing ring being apertured for the flow of material through the ring. The apertures are formed by a plurality of circumferentially distributed passages which are alternately oppositely inclined to the longitudinal axis of the screw.

3,719,352

INERTIA RESPONSIVE CARBURETOR FUEL FLOW CONTROL MEANS

Robert S. Harrison, Detroit, and Thomas R. Johnson, Ann Arbor, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 11, 1971, Ser. No. 197,901
Int. Cl. F02m 5/02
U.S. Cl. 261—23 A 11 Claims



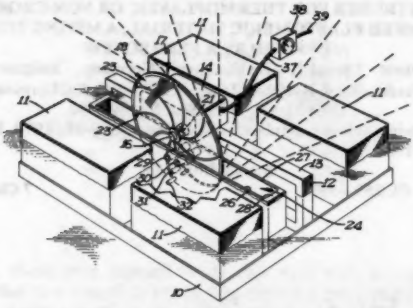
An inertia responsive carburetor fuel flow control means which accommodates for variations in fuel levels in the fuel bowl caused primarily by centrifugal forces set up by vehicle cornering. The invention is used with multi-barrel carburetors having separate passages to each barrel from the fuel bowl. An inertia sensing means, either in the form of a spring biased weighted arm or a fuel surface angle sensor, controls the positions of metering rods that cooperate with orifices in each passage to maintain essentially identical rates of flow through each passage when the passages experience different fuel heads.

3,719,353

LIQUID COOLING SYSTEM, APPARATUS AND METHOD

Lloyd G. Cherne, Edina; Leonard J. Boler, and Ernest E. Matthews, both of Minneapolis, all of Minn., assignors to Cherne Industrial, Inc., Hopkins, Minn.

Filed June 17, 1970, Ser. No. 47,078
Int. Cl. B01f 5/22
U.S. Cl. 261—90 21 Claims



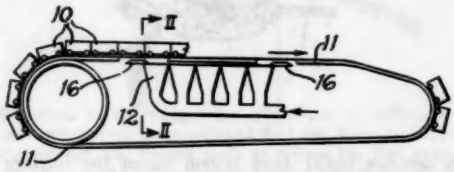
A method id disclosed for cooling liquid at high volume rate by projecting fine drops of liquid throughout the area above the surface of a reservoir of limited size, so that the unevaporated portions of such drops fall back into the reservoir and the drops normally remain close enough to the surface to minimize drift losses. Apparatus for projecting such liquid includes a rotatable member having a surface generally perpendicular to its axis of rotation. The axis is oriented so that the surface is at an angle to the horizontal, and liquid is fed to specific limited areas of the surface from which fine drops will be projected upwardly in response of the member. Such apparatus is shown in connection with a cooling system for practicing the above method, and in which liquid effluent from an operating plant is fed to such liquid projecting and spraying apparatus at one area of a reservoir, is transferred by such spraying to another area of the reservoir and is cooled during such transfer by evaporation exposure to the atmosphere above the reservoir. The system includes means defining and separating the two reservoir areas to facilitate high volume rates of spray transfer and to prevent normal liquid flow from one area to the other except by means of such spray transfer.

3,719,354

TRAVELLING GRATE MACHINES

Charles David Burgess, Cheshire, England, assignor to Simon-Carves Limited, Cheshire, England

Filed Aug. 27, 1971, Ser. No. 175,438
Int. Cl. B60g 11/22
U.S. Cl. 266—21 5 Claims



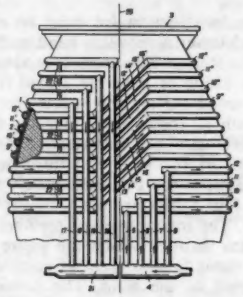
Apparatus for the gaseous treatment of solid materials comprising a plurality of pallets each having a base in the form of a grate and which are adapted to be moved in end-to-end abutting relationship through a treatment zone where a gaseous medium is passed through the material on the pallets from static wind boxes located below the pallets, characterized by the provision of dead plates extending over the width of the apparatus at the positions where the pallets enter and leave the treatment zone and by the provision of wear strips extending transversely of each pallet at the leading and trailing ends thereof and depending from the underside of the pallet to make contact with the dead plates as they pass thereover, said wear strips being of a softer material than the material of the dead plates, whereby the wear strips are worn away to accommodate for distortion of the pallets while maintaining a proper seal with respect to the dead plates.

3,719,355

BASIC OXYGEN CONVERTER

Kurt Suette, and Adolf Riegler, both of Linz, Austria, assignors to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Sept. 14, 1971, Ser. No. 180,268
Claims priority, application Austria, Sept. 24, 1970, 8613/70
Int. Cl. C21c 5/46
U.S. Cl. 266—35 6 Claims



The invention relates to a basic oxygen converter having a metal shell comprising at thermally highly stressed areas, in

particular in the area between the carrying ring and the converter mouth, at least one pipe coil group through which a coolant is flowing and which includes several half tubes of preferably semicircular cross section welded to the converter shell and joined at one end to a coolant distributor and at the other end to a coolant collector, wherein the improvement resides in that for the purpose of obtaining a pressure equalization and a uniform flow of the cooling agent, the half tubes of each group are connected with each other by means of cross canals on at least one site. By this arrangement changes in the tube cross section due to thermal stresses are rendered innocuous, if not prevented, the pressure of the coolant being uniform throughout the cooling system. The operating safety thus is improved.

3,719,356

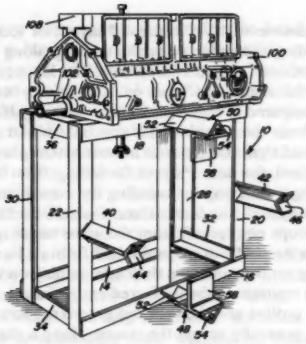
ENGINE BLOCK STAND

Jordan D. Winstead, P.O. Box 433, and Robert B. Barnes, 228 Glendale Ave., both of Rocky Mount, N.C.

Filed June 29, 1970, Ser. No. 50,861

Int. Cl. B23q *1/02, 3/00*

U.S. Cl. 269—48 **9 Claims**



A support to be used in supporting an engine block in an elevated stationary position with its deck surface horizontally disposed and facing upwardly for mounting a boring bar assembly thereon. The support or stand includes an elongated anchor bar and a pair of horizontally spaced apart upwardly facing rest surfaces from and upon which the opposite end portions of the bar are supported. The stand further includes at least one upwardly facing support surface and is designed to support an engine block therefrom with the bar extending through main bearing journals of the block, an undersurface portion of the block resting upon the support surface and at least two of the cylinder bores of the block disposed generally vertically and opening upwardly through the deck surface. Further, the bar includes an upwardly projecting clamp stud for extending upwardly through one of the cylinder bores and use in clamping the boring bar assembly to the top deck of the engine block.

3,719,357

AUTOMATIC POWER FEEDER

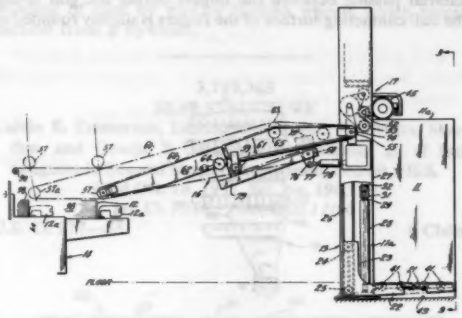
Albert F. Shields, Forest Hills, N.Y., assignor to S & S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.

Filed March 4, 1971, Ser. No. 120,838

Int. Cl. B65h *5/08, 5/22*

U.S. Cl. 271—12 **8 Claims**

An automatic sheet feeder is provided with a relatively slow speed suction wheel that engages the top of a stack of sheets supported by a rising elevator. Sheets removed horizontally from the stack by the wheel are delivered to high speed conveyor rolls which deposit the sheets in a shingled arrangement on a relatively narrow slow speed suction conveyor of adjustable length. Power means acting from below is used to adjust the suction conveyor to a height compatible with the height of



the stack in the hopper receiving sheets from the feeder, and is also used to raise the conveyor which permits the hopper to be retracted for servicing the converting apparatus associated with the hopper.

3,719,358

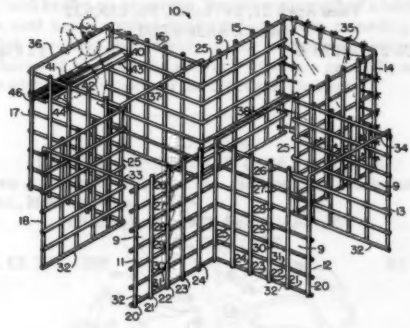
PLAYGROUND APPARATUS

David Aaron, Box 100-A, R.D. No. 1, Accord, N.Y.

Filed June 24, 1971, Ser. No. 156,425

Int. Cl. A63b *17/04*

U.S. Cl. 272—60 **1 Claim**



Vertical and horizontal bars are joined to make upstanding substantially square grids arranged to form a cruciform structure with open ends, facing pairs of grids of the structure being the same distance apart. Spanning members longer than the distance between facing grids are provided to extend through facing rectangular openings of the grids, the spanning members having transverse cleats near their ends securing the spanning members in position. The spanning members may be placed in a wide variety of positions to provide varied play possibilities. Fabric sheets with peripheral ties are provided to selectively close off or cover portions of the structure.

3,719,359

SAND WEDGE GOLF CLUB

Frank E. Evans, and Dorothy D. Evans, both of 645 Cheowa Circle, Knoxville, Tenn.

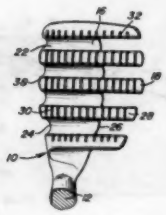
Filed Sept. 8, 1970, Ser. No. 70,060

Int. Cl. A63b *53/04*

U.S. Cl. 273—167 J **3 Claims**

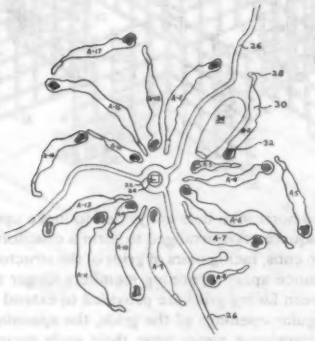
A golf club in the form of a sand wedge constructed with a relatively wide sole from the front edge to the rear edge with a plurality of spaced fingers extending upwardly and rearwardly

therefrom which are separated and slanted for elevating the ball. The underside of the fingers converge inwardly to form a generally V-shaped finger which immediately increases the space between the fingers inwardly of the front face thereof thereby reducing resistance and friction of sand or other material passing between the fingers during the golf swing. The ball contacting surface of the fingers is slightly rounded or



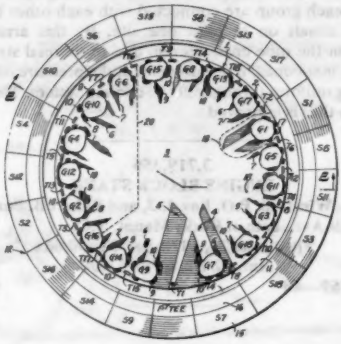
convex transversely which together with the space between the fingers reduces to a minimum the buffering and shock absorbing affect of the sand between the club face and the ball thereby allowing immediate and effective contact between the club face and the ball. The club face may be flat or concave which allows for a wider controlled range of elevation of the ball.

3,719,360
GOLF COURSE
Henry C. Purdy, 115 East Northfield Road, Livingston, N.J.
Filed April 21, 1971, Ser. No. 135,932
Int. Cl. A63b *67/02*
U.S. Cl. 273—176 A **12 Claims**



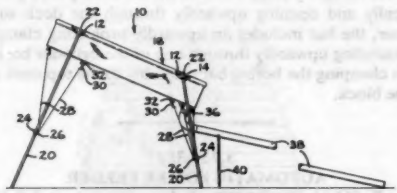
An outdoor golf course is described which includes one or more 18 hole circuits arranged radially around a central clubhouse. The base inner circuit includes six sets of three holes each leading out and then back in to the clubhouse. In each set of three holes, the tee of the first hole and the green of the third hole are located adjacent the central clubhouse. Also, in each set of three holes, the second hole includes a tee located near the first green and a green located near the third tee. Each set of the base circuit may then be used to build additional nine or 18 hole circuits leading out and back in to the central clubhouse thus providing up to six circuits in addition to the base circuit.

3,719,361
GOLF COURSE
Frank J. Rotolo, 1515 East Broadway, Tucson, Ariz.
Filed July 31, 1970, Ser. No. 59,992
Int. Cl. A63b *67/02*
U.S. Cl. 273—176 AB **5 Claims**



A golf course with an improved layout of tees and greens and including spectator stands extending along and at least partially around the golf course area. The layout of the course provides for regulation play on a relatively small area of ground compared to conventional regulation golf courses. The distance from tee to green for any hole is not greater than slightly more than the distance a tournament player can drive the ball from the tee. Players travelling from tee to green travel along a walkway surrounding the course and hence, the usual fairway and rough areas are unobstructed by players so several groups can tee off from the same tee in quick succession. Since each player plays the ball from its lie adjacent the green, play on the course is the same as play on conventional regulation courses. In the preferred embodiment, the course is of circular outline and the tees and greens are so arranged that the play is generally across the course along a diameter of the course. The course can also be elliptical, rectangular, polygonal or square in outline. Signal lights can be provided on each green to indicate to players on the tee that the green is clear and it is safe for them to hit their tee shots.

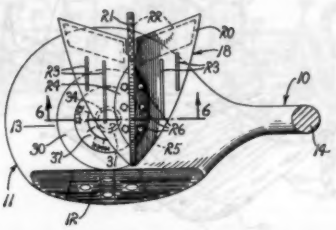
3,719,362
GOLF PRACTICE DEVICE
Jack D. Blanchard, 20351 Bolinger Road, Cupertino, Calif.
Filed Dec. 27, 1971, Ser. No. 212,213
Int. Cl. A63b *69/36*
U.S. Cl. 273—182 R **9 Claims**



A golf practice device arranged to receive chip or pitch shots in a flexible receptacle suspended from a segmented ring carried by detachable legs so as to permit ready disassembly and storage, the legs being pivotally adjustable to vary the ring and receptacle disposition, and also arranged to return the received balls to the player through a funnel in the receptacle and a ball-return conduit. Resilient tie-down straps are con-

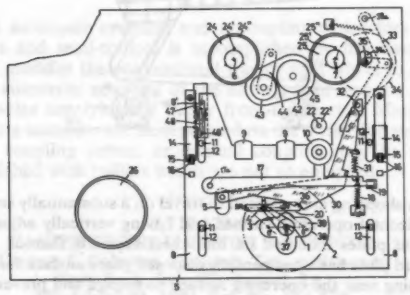
nected between spaced apart locations on the lower edge of the receptacle and collars which may be shifted to different positions on the legs.

3,719,363
GOLF CLUB SWING TRAINING DEVICE
John Gardon Harrison, 1461 Aster Drive, Apt. 3, Antioch, Calif. 94509
Filed Aug. 5, 1971, Ser. No. 169,327
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 A 7 Claims



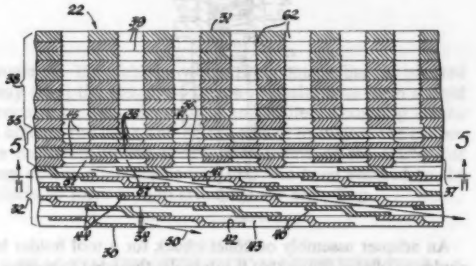
An auxiliary training attachment for the head of a golf club having a horizontal stabilizer of flexible material, a centrally disposed vertical stabilizer of flexible material extended from the horizontal stabilizer, malleable strips of metal imbedded in the trailing edges of each stabilizer supplying bendably adjustable rudder and elevator control, and a releasable mount for supporting the stabilizer on the head of a golf club for rotational adjustment aerodynamically to urge a desired swing path for the head of the golf club. The releasable mount is either a suction cup for so-called "wood" or a spring clip for so-called "iron." There is a dial base provided with radial grooves engageable by ribs on the bottom of the horizontal stabilizer in various adjusted positions for "hook" or "slice" corrections. Sockets having restricted entrance openings are provided to releasably hold weights on the stabilizer.

3,719,364
SOUND RECORDING AND REPRODUCING APPARATUS
Gerd Hessland, Penzendorf, and Ulrich Gräbel, Nuremberg, Germany, assignors to Grundig-Elektro-Mechanische Versuchsanstalt, Furth, Bavaria, Germany
Filed Apr. 30, 1969, Ser. No. 820,489
Claims priority, application Germany, May 2, 1968, P 17 72 353.4
Int. Cl. G11b *15/24*
U.S. Cl. 274—4 D 6 Claims



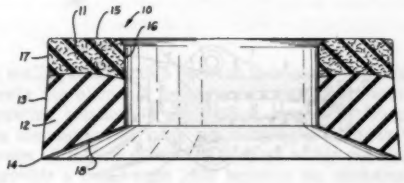
A tape recorder wherein all operations can be initiated and terminated by a single actuating member which is rotatable in a starting position and is movable sideways to and from starting position. Angular movements of the actuating member effect displacements of a platform which carries the sound heads and the pressing roller for the tape. Sidewise movements of the actuating member are utilized to effect rapid forward advance or rapid rewinding of tape by way of friction wheels which receive motion from a flywheel.

3,719,365
SEAL STRUCTURE
Calvin E. Emmerson, Indianapolis, Robert A. Griffin, Sheridan, and George B. Meginnis, Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 18, 1971, Ser. No. 190,179
Int. Cl. F01d *11/08*; F02f *11/00*
U.S. Cl. 277—53 6 Claims



A porous cooled seal ring adapted to cooperate with blade tips, seal knives or, generally, the other element of a labyrinth type seal has a special laminated structure providing controlled porosity, abradability of the metallic structure, and discharge of air from the seal in a direction generally accordant with the movement of the other seal element.

3,719,366
HETEROGENEOUS LIP-TYPE PACKINGS
Aaron J. Pippert, Houston, Tex., assignor to Utex Industries, Inc., Houston, Tex.
Filed May 26, 1971, Ser. No. 147,027
Int. Cl. F16j *15/32*
U.S. Cl. 277—205 8 Claims



A packing comprised of an annular body having a sealing section and a reinforcing section in which the sealing section which is of a resilient material has at least one sealing lip and the reinforcing section is made up of a strip of fabric wound into a helix with the convolutions of the helix superimposed upon one another and bonded together to form an integral section. The threads of the fabric in the strip are disposed obliquely to the opposed edges of the strip such that when the strip is wound into the helix, substantially the ends of the threads are exposed to the wearing surfaces of the reinforcing section. The invention also includes a method of manufacturing the packing in which the sealing section, having the sealing lip, is formed from a suitable resilient material and is then bonded to the reinforcing section which has been formed by

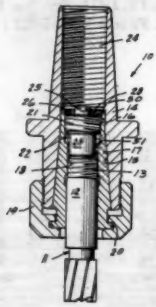
winding the strip of fabric into a helix with the convolutions superimposed upon one another and then bonding together the convolutions.

3,719,367

COLLET CHUCK FOR THREADED SHANK TOOLS

Walter Baturka, Frankenmuth, Mich., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Sept. 1, 1971, Ser. No. 177,050
Int. Cl. B23b *31/30, 31/04*
U.S. Cl. 279—1 A 25 Claims



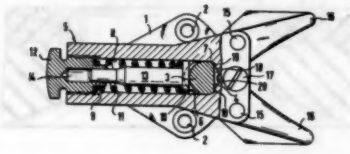
An adapter assembly or collet chuck for a tool holder includes a collet member that is internally threaded to receive a threaded shank tool, there being a backup screw providing a force on the end of the tool, the threads of the tool and of the backup screw being dissimilar in pitch or hand so that if the tool slips within the collet during usage, a force is developed between the dissimilar threads whereby further slipping is precluded.

3,719,368

TOE IRON FOR SAFETY SKI BINDINGS

Peter Biermann, Garmisch-Partenkirchen, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany

Filed Dec. 1, 1970, Ser. No. 93,942
Claims priority, application Germany, Dec. 22, 1969, P 19 64 306.2
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T 8 Claims



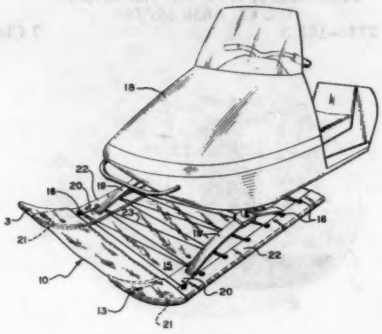
A pivoted member carries at least one soleholder and is mounted on a vertical carrying pin that is rigid with a base plate. The pivoted member is movable from its normal position against the force of at least one spring. At least one vertical and preferably flat surface is formed on that half of the carrying pin which is adjacent to the soleholder. A mating surface of the pivoted member is associated with each of said vertical surfaces and engages the same when the pivoted member is in its normal position. The mating surface or surfaces is a portion or are portions of the wall of the bearing of the pivoted member. Said bearing is clear of that half of the carrying pin which is remote from the soleholder when the pivoted member is in its normal position.

3,719,369

SNOW FLOTATION APRON FOR SKIMOBILES

Phillip D. Savage, Owls Head, N.Y., assignor to Hall Ski-Lift Company, Inc., Watertown, N.Y.

Filed June 10, 1971, Ser. No. 151,689
Int. Cl. B62d *9/04*
U.S. Cl. 280—28 2 Claims



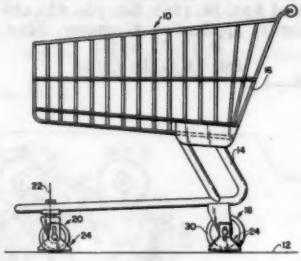
A generally rectangular apron of flexible material has pocket means at its forward end into which the toes of the skis of a snowmobile are adapted to be inserted. The length of the apron is substantially that of the skis and its width substantially larger than the distance from the outside edge of one ski to the outside edge of the other, the side edges of the apron being provided with eyelets so that, when the edges are turned up over the top of the ski edges and a flexible cord progressively laced across from one edge to the other through the eyelets, the apron is securely secured to the skis and provides lift from the snow between the skis.

3,719,370

ANTI-THEFT SHOPPING CART

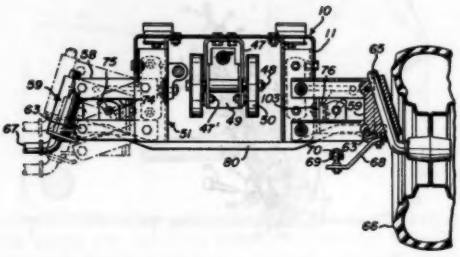
Richard Conway Gintick, 126 Bond Street, and Michael Norman Gintic, 700 Park Street, both of Hartford, Conn.

Continuation-in-part of Ser. No. 842,443, July 16, 1969, abandoned. This application April 2, 1971, Ser. No. 130,733
Int. Cl. B62b *11/00*
U.S. Cl. 280—33.99 C 6 Claims



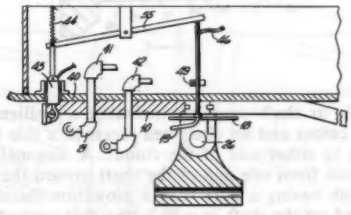
A shopping cart adapted to travel on a substantially smooth horizontal operating surface and having vertically adjustable guard plates mounted on the wheel supports thereof. Each guard plate has a horizontally disposed guard surface for positioning near the operating surface to engage and prevent the cart from rolling over surface irregularities. Each guard plate is adjustable relative to and releasably retained in assembly with an associated wheel support by an axle bolt which also serves to restrain the guard plate against angular movement relative to the wheel support.

3,719,371
MOBILE UNIT WITH IMPROVED SUSPENSION STRUCTURE
Orly Musgrave, Springfield, Ohio, assignor to Boise Cascade Corporation, Boise, Idaho
Division of Ser. No. 670,151, Sept. 25, 1967, Pat. No. 3,550,364. This application Nov. 25, 1970, Ser. No. 92,694
Int. Cl. B62d 7/18
U.S. Cl. 280—96.2 R 5 Claims



A mobile unit for vehicle use having a novel independent front suspension. The unit includes unique support elements which stabilize its chassis and embodies an improved transmission. Preferred embodiments may be incorporated to provide rugged, durable and highly versatile vehicles such as riding mowers and like equipment.

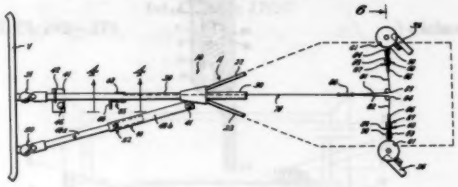
3,719,372
AUTOMATIC TRACTOR-TRAILER COUPLING DEVICE
Charles S. Rawlings, Augusta, Kans., assignor of a fractional part interest to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Dec. 30, 1971, Ser. No. 214,077
Int. Cl. B60d 1/08
U.S. Cl. 280—421 5 Claims



The automatic coupling and uncoupling of tractors to trailers and semi-trailers is accomplished by this device which modifies the conventional tractor fifth wheel to include automatic coupling of the electric light and the air line cables supplying the trailer from the tractor. Mating coupling members are incorporated on the trailer for automatic coupling action, or manual coupling may be accomplished with trailers which are not so equipped.

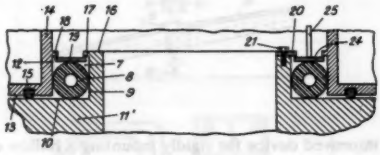
3,719,373
CASTERED TRAILER FOR A VEHICLE
Thomas C. Johnson, Houston, Tex., assignor to Easy-Back, Inc., Shreveport, La.
Filed June 21, 1971, Ser. No. 154,779
Int. Cl. B62d 53/00
U.S. Cl. 280—474 15 Claims

A trailer for a vehicles includes a frame supported by casters with cooperating latch and detent means on the trailer and casters, respectively, to normally lock the casters against swiveling movement. Tongue means is connected with the frame and includes pivot means for securing the trailer to a vehicle, a control bar is pivotally mounted on the trailer adjacent the tongue for easy access and includes pivot means for securing the control bar to the vehicle at a point offset from the connection of the



tongue to the vehicle when the control bar is pivoted away from the tongue to a second position to form a rigid structure between the vehicle and trailer. Actuating means to actuate the latch and detent means to release the casters are mounted on the tongue and frame of the trailer for easy access after the control bar has been secured to the vehicle to form a rigid structure for swiveling.

3,719,374
SEALING CONSTRUCTION BETWEEN TWO JUXTAPOSED ELEMENTS
Francisco M. Serrano, Paris, France, assignor to Compagnie Francaise des Petroles, Paris, France
Filed Mar. 5, 1970, Ser. No. 16,881
Claims priority, application France, Mar. 7, 1969, 6906361
Int. Cl. F16l 17/00
U.S. Cl. 285—97 9 Claims

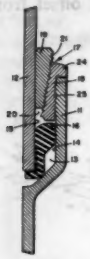


A sealing construction between two juxtaposed elements wherein the elements have support surfaces disposed in supporting relation to each other, and walls extending from the support surfaces and defining a chamber therebetween. A sealing member is inflated within the chamber to provide a liquid-tight joint between the elements.

3,719,375
REINFORCED PIPE JOINT
Karl Olof Nordin, Varnamo, Sweden, assignor to Forsheda Gummifabric AB, Forsheda, Sweden
Filed Mar. 1, 1971, Ser. No. 120,036
Claims priority, application Sweden, Mar. 2, 1970, 2,678/70
Int. Cl. F16l 21/06
U.S. Cl. 285—339 5 Claims

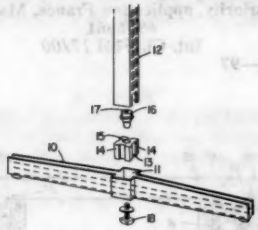
An arrangement for imparting stability and rigidity to a pipe joint including a pair of pipes havng their adjacent ends placed in concentric relationship and with an annular space therebetween. A seal ring is located in the space for precluding escape of fluid carried in the

pipes. To impart stiffness to the joint, a pair of tapered inner and outer rings are placed in interlocking engagement in the space and are arranged to be axially displaceable in a tightening direction. As the inner ring is forced



inwardly along the pipe, both rings are compressed and locked together by coacting teeth thus imparting stiffness to the joint and precluding axial displacement of the rings outwardly.

3,719,376
EXPANSION DEVICE FOR MOUNTING AN UPRIGHT COLUMN TO A BASE STRUCTURE
Jacob L. Johnson, 7518 Piney Branch Road, Silver Spring, Md.
Filed March 22, 1971, Ser. No. 126,857
Int. Cl. B25g *3/28*
U.S. Cl. 287—20.3 **2 Claims**



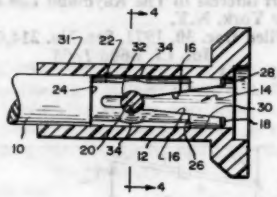
An improved device for rigidly mounting a hollow column to a base structure is provided. The device comprises a plurality of expansion members which when arranged end to end form a block which is telescopically accepted into the end of the hollow column, the block has a central bore with tapered walls, a tapered wedge member is force by appropriate means into the central bore forcing the expansion members radially outward and against the column wall. The column wall is forced by the expanding members into rigid contact with the base.

3,719,377
TURNBUCKLE
Robert D. Schultz, and John DiMartino, both of Sayville, N.Y., assignors to Peck and Hale Inc., West Sayville, N.Y.
Filed July 21, 1970, Ser. No. 56,928
Int. Cl. F16b *7/06*
U.S. Cl. 287—60 **16 Claims**

A turnbuckle is disclosed comprising a body member having a slit extending longitudinally therethrough, said slit having a reduced width portion forming an internal shoulder in the body member, an adjustment rod having a threaded portion, said rod being positioned in the slit with its threaded portion situated in the wide portion of the slit, a nut member disposed within the wide portion of the slit in threaded engagement with the adjustment rod, and a plurality of adjustment spacers

seated on the rod within the wide portion of the slit and held in abutting relationship to the internal shoulder by the nut member.

3,719,378
PULL-PROOF CONTROL KNOB
George C. P. Windsor, Oak Park, Ill., assignor to Warwick Electronics Inc.
Filed Aug. 3, 1971, Ser. No. 168,664
Int. Cl. F16d *1/06*
U.S. Cl. 287—53 H **2 Claims**

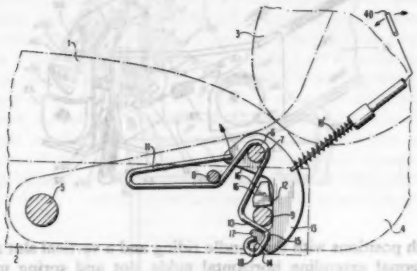


A knob to shaft coupling including a resilient shaft having a cutout and an elongated recess in a side thereof extending to either side of the cutout. A diagonal guideway extends from one end of the shaft toward the cutout and a knob having a bore with a projection therein may be received on the shaft in such a way that contact of the projection with the diagonal surface will deflect the recessed portion of the shaft to permit the projection to enter the cutout whereupon the resilience of the shaft will firmly hold the projection in the cutout to establish a coupling between the knob and the shaft.

3,719,379
BACKREST LOCKING MECHANISM OF VEHICLE SEATS
Gerhard Sigmund, Stuttgart-Vaihingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany
Filed Sept. 22, 1970, Ser. No. 74,411
Claims priority, application Germany, Sept. 29, 1969, P 19 49 085.8
Int. Cl. B60n *1/04*
U.S. Cl. 297—379 **39 Claims**

An installation for locking the backrest in seats of vehicles, particularly motor vehicles in which a forward tilting or pivot-

ing of the backrest is prevented during the drive of the vehicle, by a disengagable locking mechanism; the locking mechanism includes clamping means preferably arranged at the inner side of two seat fittings supported at the seat frame which retain the backrest in the driving condition under a spring force in

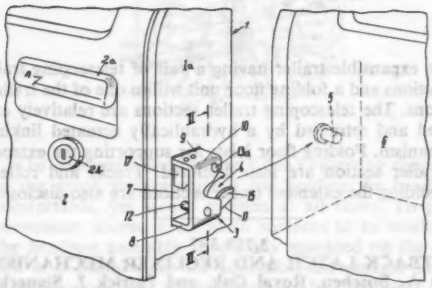


the rearwardly pivoted position whereas upon exceeding the spring force by a load acting on the backrest in the driving direction, a hook-like member supported on a pivot pin fastened at the fitting stops the backrest at a relatively fixed part such as a pin member or the like secured at the seat frame.

3,719,380
MOTOR-VEHICLE DOOR LATCH WITH PIVOTAL LATCHING FORK

Hans Dieter Watermann, Metzkausen, Germany, assignor to Arn Kiekert Sohne, Kettwigerstrasse, Heiligenhaus, Germany

Filed Jan. 4, 1971, Ser. No. 103,678
Int. Cl. E05c *3/06*
U.S. Cl. 292—216 **8 Claims**

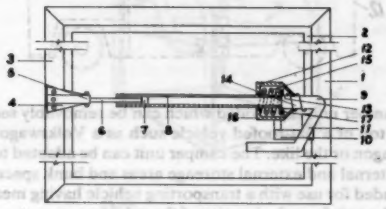


A motor-vehicle door latch has a housing formed by a U-shaped member which projects from the door edge and has a flat backing plate bridging its two horizontal U-legs. The web of the U-shaped member is formed with a horizontally directed notch. A horizontal pivot pin for a vertical latching fork is journaled in the backing plate and the web below the notch and above the notch is pivoted a rotatable detent engageable with one arm of the fork to lock a bolt mounted on the vehicle doorpost in the notch and hold the door closed. The other arm of the fork is driven back in the housing by the bolt when the door is closed to rotate the locking arm into the locking position. An elastomeric body within the housing forms a resilient cushion for the door bolt when the door is closed.

3,719,381
RELATING TO ADJUSTABLE STAYS

Tjaart Petrus Venter, 117 Koos de la Ray Street, Pretoria North, Transvaal, South Africa

Filed March 25, 1971, Ser. No. 128,350
Int. Cl. E05c *17/30*
U.S. Cl. 292—275 **3 Claims**

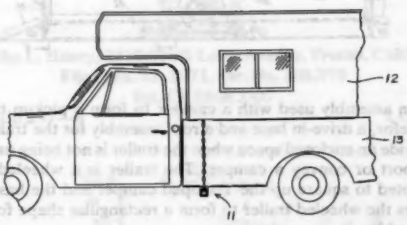


An adjustable stay comprising a tubular member having an elongated member telescopically extensible therefrom, one of said members having at least part of its length of non-circular cross-section and the other member having a co-operating portion of non-circular cross-section adapted upon relative rotation of the members to engage and disengage the said one member.

3,719,382
CAMPER HOLD-DOWN BRACKET

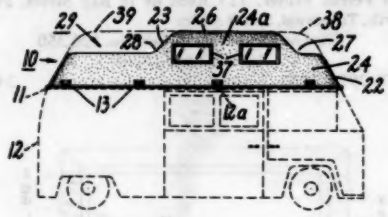
John Stanley Palm, R.R. 1, Altona, Ill. 61414

Filed Aug. 2, 1971, Ser. No. 168,198
Int. Cl. B62d *21/14*
U.S. Cl. 296—23 MC **3 Claims**



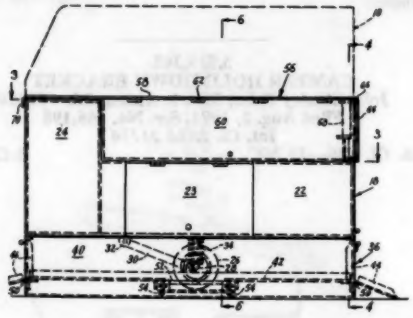
A bracket is clamped by bolts directly to the frame of a pickup truck, and it supports a removable extension bar extending outwardly below the body of the truck. The outer end of the extension bar and the overhanging portion of a pickup camper are connected by a usual chain and turnbuckle combination. The only force applied by the bracket to the body of the truck is the downward force applied to the camper. The extension bar is readily removable so that it does not deface the appearance of the pickup nor interfere with usual clearance during normal use of the truck.

3,719,383
REMOVABLE CAMPER UNIT
Michael Ferro, 18 77th Street, Brooklyn, N.Y.
Filed Sept. 30, 1970, Ser. No. 76,675
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 MC **7 Claims**



A camper unit is provided which can be removably secured to the top of a flat-roofed vehicle such as a Volkswagon station wagon or the like. The camper unit can be adapted to provide internal and external storeage areas and bunk space, and is intended for use with a transporting vehicle having means to enter the unit from the interior of the vehicle.

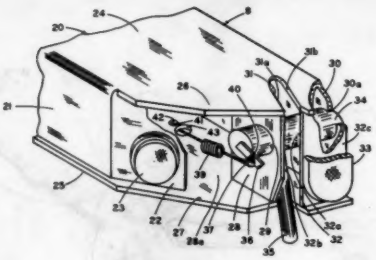
3,719,384
CAMPER BASE AND TRAILER
Thomas C. du Bois, 119 Colonial Avenue, Pitman, N.J.
Filed Oct. 30, 1970, Ser. No. 85,551
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 ML **5 Claims**



An assembly used with a camper to form a pickup trailer therefor, a drive-in base and a roof assembly for the trailer to provide an enclosed space when the trailer is not being used to support or convey a camper. The trailer is a wheeled unit adapted to square up the T-shaped camper and the base engages the wheeled trailer to form a rectangular shape for the assembly.

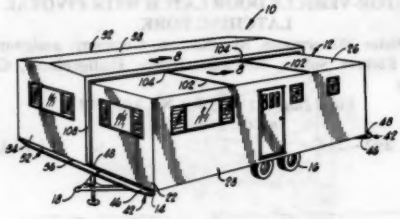
3,719,385
CHASSIS-TO-CONTAINER LOCKING MEANS
George W. Carr, Cincinnati, Ohio, assignor to Pullman Incorporated, Chicago, Ill.
Filed Dec. 15, 1970, Ser. No. 98,344
Int. Cl. B60p *7/10*
U.S. Cl. 296—35 A **7 Claims**

A locking mechanism for coupling of the trailer chassis to the supported container where the locking mechanism is an end extension of the chassis cross member having an intermediate transverse wall and a back wall adjacent the container corner casting, a rearward horizontally extending rotatable locking pin reciprocally disposed in both walls from a withdrawn unlocked position with the rearward end of the pin inwardly of the back wall to an extended locked position with the rear end of the pin being outwardly of the back wall and into the end opening in the container corner casting, handle means for rotating and longitudinally moving the pin between



both positions with the handle riding and a vertical slot and a diagonal extending horizontal guide slot and spring means connecting with a moment arm on the front side of the pin for biasingly holding the pin in either position.

3,719,386
EXPANSIBLE TRAILERS
Ray Puckett, 3008 10th St., Wichita Falls, Tex. 76309, and Sidney K. Lambert, Wichita Falls, Tex.; said Lambert assignor to said Puckett
Filed July 22, 1970, Ser. No. 57,229
Int. Cl. B60g *3/34*
U.S. Cl. 296—26 **9 Claims**

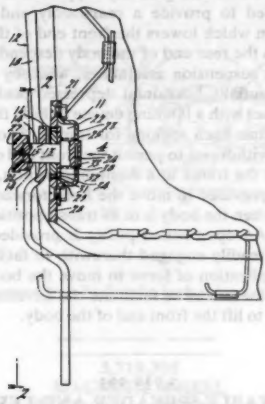


An expansible trailer having a pair of telescoping trailer sections and a folding floor unit within one of the trailer sections. The telescoping trailer sections are relatively extended and retracted by a hydraulically actuated linking mechanism. Folding floor joists for supporting the extended trailer section are also disclosed. Tracks and rollers for guiding the extended trailer sections are also disclosed.

3,719,387
SEATBACK LATCH AND RECLINER MECHANISM
John A. Boschen, Royal Oak, and Patrick J. Stanecki, Allen Park, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 3, 1971, Ser. No. 204,499
Int. Cl. A47c *3/00;* **B60n** *1/02*
U.S. Cl. 297—355 **12 Claims**

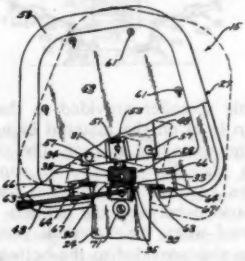
A seatback latch mechanism for a seatback frame pivotally supported on a seat frame for forwardly or rearwardly tiltable movement relative to the latter. The latch mechanism comprises a nonrotatable longitudinally shiftable shaft carrying a nonrotatably secured external gear means which meshes with an internal gear means to hold the seatback frame against tiltable movement. Longitudinal shifting of the shaft disengages the gear means permitting forward or rearward tilting movement of the seatback frame about the axis of the shaft, the

latter being fixed relative to the seat frame. The mechanism includes indexing or locking means for controlling



the gear means engagement positions and thereby the locking positions of the seatback frame relative to the seat frame.

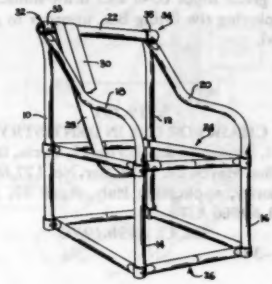
3,719,388
ADJUSTABLE HEADREST ASSEMBLY FOR A DENTAL CHAIR
George A. Fortnam, Des Moines, Iowa, assignor to Den-Tal-Ez Mfg. Co.
Filed May 12, 1971, Ser. No. 142,489
Int. Cl. A47c *7/38*
U.S. Cl. 297—405 **2 Claims**

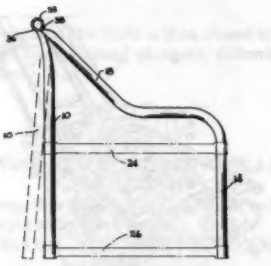


The headrest assembly has a head receiving depression in the front surface thereof for holding the head in a comfortable, yet secure position at all times. To permit convenient access to all tooth surfaces to be worked on the headrest assembly is swivelly mounted on the backrest of a dental chair for adjustable movements laterally and transversely of the backrest and for rotational movement about an upright axis. A single conveniently located lever is readily actuated to release the headrest from and to lock the headrest in an adjustably moved position.

3,719,389
THERMO PLASTIC TUBING FURNITURE
Douglas G. Burton, 9435 Bona Vista Lane, Whittier, Calif., and Norman L. Kiger, 7691 Belgrave Avenue, Garden Grove, Calif.
Filed May 19, 1971, Ser. No. 144,915
Int. Cl. A47c *4/02, 7/00*
U.S. Cl. 297—440 **10 Claims**

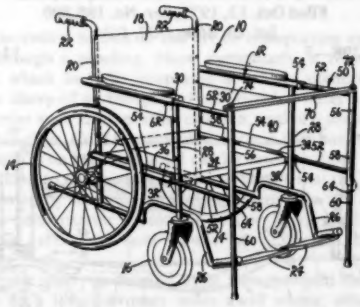
A method and apparatus for furniture construction entails the forming of thermo-plastic tubing side and cross frame sections wherein joints for securing interconnected members to each other comprise flattened closed loop clamping sections integrally connected with adjoining frame member portions. The loop sections, even in unstressed condition of the frame members, are dimensioned to be just equal to, or slightly smaller than the tubular members that are retained and





clamped therein. Further, the construction is such, that upon assembly the portions of the tubular members on either side of the several flattened closed loop clamping sections are stressed to hold these portions closer to each other, so that they will more tightly grasp the tubular members that each encircles.

3,719,390
WHEEL CHAIR
Martha L. Haney, 2319 South Lotus Avenue, Fresno, Calif.
Filed Jan. 22, 1971, Ser. No. 108,870
Int. Cl. B60h *3/00*
U.S. Cl. 297—6 **1 Claim**



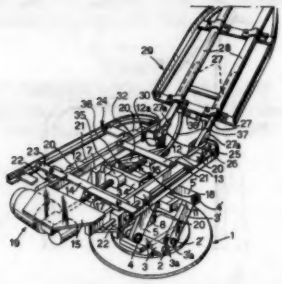
An improved wheel chair for a patient-operator unable to support himself unaided and erect, characterized by a pivotal seat and an auxiliary frame telescopingly coupled with the frame of the wheel chair and employable by the operator in

supporting himself erect. A particular feature of the invention resides in the auxiliary frame, which is provided with a pair of vertically oriented legs, supported for displacement in both horizontal and vertical directions, whereby the legs can be spaced from the wheel chair and vertically extended into an operative engagement with the floor, and a lifting-bar fixedly suspended between the legs so that the operator can position the seat of the wheel chair in a desired relationship with respect to a given toilet bowl and draw himself to an erect position, employing the lifting-bar, in order to gain access to the toilet bowl.

3,719,391
CHAIR FOR USE IN DENTISTRY

Vincenzo Neri, Strada Antica S. Vito 12, Turin, Italy

Filed March 24, 1971, Ser. No. 127,682
Claims priority, application Italy, April 17, 1970, 68311; July 21, 1970, 69506 A/70
Int. Cl. A49b *19/00*
U.S. Cl. 297—341 **5 Claims**

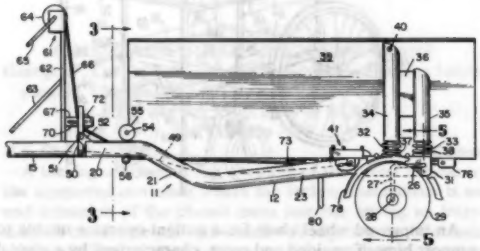


An odontological chair has, in addition to the usual raisable seat and tiltable backrest longitudinally slidable seat and backrest frames. Movement of these two frames is effected in opposite directions and by different amounts automatically as the backrest is tilted, and proportionately to the angle of tilt, so that the frames approach each other as the backrest is lowered, avoiding movement of the patient's body on the seat and backrest, which would otherwise occur. In a modification the entire seat structure is moved horizontally as the backrest is raised or lowered, to prevent horizontal displacement of the patient's head.

3,719,392
DUMP BODY VEHICLE

Arvin E. Russell, 430 Sandra Lane, Indianapolis, Ind.

Filed Oct. 13, 1971, Ser. No. 188,800
Int. Cl. B60p *1/02, 1/34*
U.S. Cl. 298—5 **11 Claims**

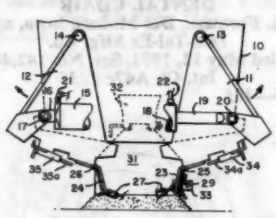


A dump body vehicle including a frame and a body, the rear end of the body being pivotally supported from upstanding resilient suspension assemblies supported, in turn, from crank axles journaled at the rear end of the frame to rock rearwardly at times, the front end of the body being longitudinally slidable relative to the frame and guidedly supported from the frame which is formed to provide a rearwardly and downwardly inclined section which lowers the front end of the body commensurately as the rear end of the body descends during such rocking of the suspension assemblies, whereby the body assumes a substantially horizontal depressed position for easy loading, together with a latching device to hold the suspension assemblies against such rocking for transit. Another latching device can be withdrawn to permit the front end of the body to rise relative to the frame to a dumping position, and a winch and cable are provided to move the body forwardly to transit position and, when the body is in its transit position, to elevate its front end. An open-ended pulley is provided so that the cable may be readily engaged therewith to facilitate the advantageous application of force to move the body forwardly, or disengaged therefrom to facilitate the advantageous application of force to lift the front end of the body.

3,719,393
ADJUSTABLE SPREADER AND LEVELER FOR DUMP TRAILER

Thomas Viviano, 218 Victor Ave., Campbell, Calif. 95008

Filed Nov. 15, 1971, Ser. No. 198,705
Int. Cl. B60p *1/56*
U.S. Cl. 298—35 M **5 Claims**



An adjustable spreader provided to the bottom of a dump trailer to level off the material being dumped and also control the spreading thereof. The dump trailer is provided with clamshell gates with runners pivotally attached to the adjacent bottom sides thereof. Suitable chains are provided between the runners to control the spreading thereof when the clamshell gate members are open. Means is also provided to the bottom of the clamshell gates for holding the runners in elevated position when not in use. A leveling plate is attached to the rear of the trailer hopper and this plate extends across the rear ends of the runners so that it functions to level off the material dumped from the hopper as the trailer is moved forward.

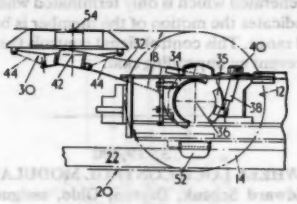
3,719,394
APPARATUS FOR STEERING A LONGWALL MINERAL MINING MACHINE

Dennis Hartley, Burton-on-Trent, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Jan. 11, 1971, Ser. No. 105,299
Claims priority, application Great Britain, Jan. 15, 1970, 01965/70
Int. Cl. E21c *27/24*
U.S. Cl. 299—1 **12 Claims**

The invention relates to apparatus for steering longwall mining machines. The apparatus comprises an electromagnetic-radiation emitter/detector which is mounted on the end

of an arm pivotally mounted on the machine. The emitter/detector is located immediately behind the machine's rotary



cutter and is urged by a hydraulic jack so as to remain close to the roof.

3,719,395

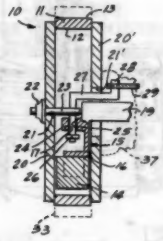
MAGNETIC WHEEL

Dzemal Mulasmajic, 338 Pleasant Hill Boulevard, Palatine, Ill.

Filed Aug. 30, 1971, Ser. No. 175,940

Int. Cl. B06b *3/00*; **B60b** *19/00, 9/00*

U.S. Cl. 361—5 R **8 Claims**



A magnetic wheel for supporting a vehicle employs a permanent magnet in the shape of a ring which is journalled for rotation about a shaft. The shaft is loosely coupled to the frame of the vehicle for vertical movement by means of a member which positions a magnet within the ring which is poled to repel the ring. The wheel is adapted for steering by providing that the loose coupling includes a pivotal coupling and by providing a lever arm for connection to a steering mechanism, such as a rack and pinion mechanism.

3,719,396

METHOD AND APPARATUS FOR MOLDING ARTICLES CONTAINING INSERTS

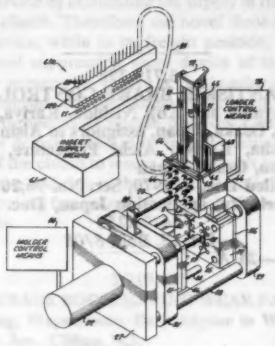
Roger D. VanDeWalker, and Blair E. Howe, both of Costa Mesa, Calif., assignors to California Injection Molding Co., Inc., Costa Mesa, Calif.

Filed Oct. 8, 1970, Ser. No. 79,191

Int. Cl. B65g *51/02*

U.S. Cl. 302—2 R **9 Claims**

A method and apparatus for mass-manufacturing elongated hollow plastic objects, such as covers for electronic thermometer probes, and ball point pens, having inserts at the ends thereof. The inserts are automatically loaded, by vibrating the same into pockets and then lifting them out of the pockets into suction tubes which pass through a horizontal transfer plate into nests in a vertical transfer plate. Vacuum is employed to maintain the inserts in the nests during movement of the vertical transfer plate to positions adjacent the distal ends of hollow core pins through which air is sucked. The vacuum in the vertical transfer plate is then converted to pressure to cause the inserts to fly across the air gaps to the core pin ends, following which the inserts are maintained on



such ends by suction. The mold is then closed to cause the inserts to engage spring-biased plungers, following which the plastic is injected.

3,719,397

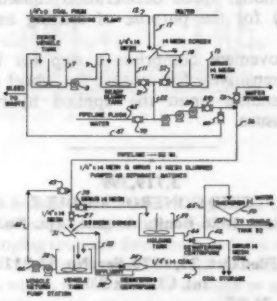
CONVEYING A COAL SLURRY WITH A SINGLE PIPELINE

Edward J. Wasp, San Rafael, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed Dec. 20, 1971, Ser. No. 209,636

Int. Cl. B65g *53/30*

U.S. Cl. 302—66 **5 Claims**



This invention relates to the art of transporting coal with water through a pipeline. More particularly, it relates to a method which includes preparing a vehicle comprising an aqueous slurry of an inorganic finely divided water insoluble solid carrier such as magnetite, coal ash, coal of a selected size or various clays. Coal in particulate form is then suspended in the vehicle. The insoluble solid carrier must be finely divided as compared to the particulate coal to ensure that the two can be separated by screening or hydraulic sizing. In this connection, the solid carrier should all be finer than 100 microns while the particulate coal should all be larger than 500 microns.

After the slurry is formed, it is then pumped through a pipeline to a location many miles away where, after being separated from the vehicle, the coal is utilized and the coal-free vehicle is collected. This operation is continued for a period of several days at the end of which pumping of the slurry is discontinued and the pipeline is flushed with water. Upon completion of the flushing, the coal-free vehicle is pumped

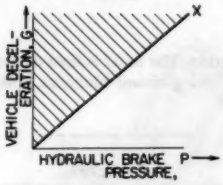
back through the pipeline to the point at which the coal slurry is prepared, the vehicle being reused. The water filling the pipeline is returned to the preparation point by the return of the vehicle. In this manner, it is possible to achieve transportation of the coal and reutilization of the vehicle with but a single pipeline.

3,719,398

ANTISKID BRAKE CONTROL

Katuki Takayama and Koji Nishida, Kariya, and Hayao Yamazaki, Osaka, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi Prefecture, and Sharp Corporation, Osaka, Japan

Filed Dec. 8, 1970, Ser. No. 96,208
Claims priority, application Japan, Dec. 9, 1969, 44/99,253
Int. Cl. B60f *8/08*
U.S. Cl. 303—21 A **9 Claims**



This invention relates to a method of and an apparatus for the control of antiskid hydraulic brake pressure by sensing both the hydraulic pressure being applied to wheel cylinder means of at least a vehicle wheel and the wheel angular rotational speed deceleration caused thereby in the wheel(s) for the purpose of sensing an impending wheel lock.

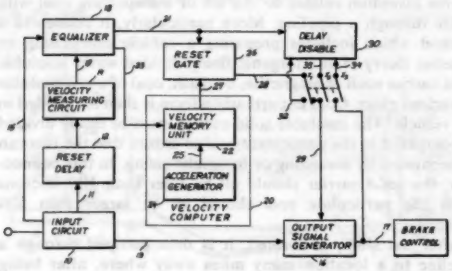
The improvement comprises a step for intentionally varying the sensitivity for sensing the wheel speed deceleration depending upon the applied hydraulic brake cylinder pressure.

3,719,399

SKID CONTROL MODULE

Carmeli Adahan, 1626 Bonita Avenue, Apt. No. 6, Berkeley, Calif.

Filed Oct. 26, 1970, Ser. No. 83,811
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 BE **10 Claims**



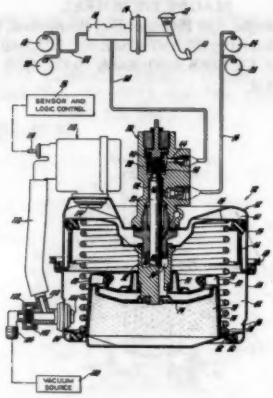
An skid control control module which generates accurate signals indicating the instantaneous velocity of a moving member from successive input signals with no appreciable time delay. Each instantaneous velocity signal of the member is compared with a signal developed according to a maximum permissible acceleration rate. Whenever the comparison indicates the member exceeded the permissible rate, a control signal is generated which is only terminated when a later comparison indicates the motion of the member is back within the permitted range. This control signal controls the braking force so as to prevent an impending skid.

3,719,400

WHEEL LOCK CONTROL MODULATOR

Donald Edward Schenk, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 3, 1971, Ser. No. 195,249
Int. Cl. B60k *8/06*
U.S. Cl. 303—21 F **2 Claims**



A wheel lock control system in which the brake apply pressure modulator is divided into four chambers, one always subjected to atmospheric pressure and normally providing pressure support to the hydraulic displacement piston, one always being subjected to vacuum during operation, and the other two being subjected to vacuum or atmospheric air pressure or some intermediate pressure depending upon the system operational mode to control movement of the brake apply pressure modulating valve displacement piston. Two of the chambers are separated by a divider plate which also act as a spring seat for a hydraulic support pressure support spring as well as providing a locking arrangement for holding the outer annulus of a support diaphragm in sealed position against a portion of the modulator housing.

3,719,401

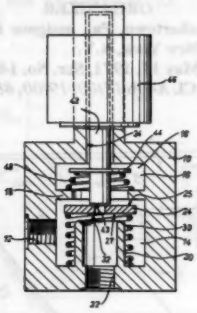
SOLENOID-OPERATED HYDRAULIC SWITCHING VALVE

Marco Peruglia, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed July 26, 1971, Ser. No. 166,149
Claims priority, application Italy, April 28, 1971, 68411 A/71
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 F **4 Claims**

A solenoid-controlled hydraulic changeover valve is described, in which a movable solenoid armature, upon energization of the solenoid, closes a restrictor orifice in a movable obturator and simultaneously presses the obturator on to a seat, cutting off communication between an inlet and outlet; upon subsequent de-energization of the solenoid the fluid

pressure derived from the valve inlet keeps the obturator against the valve seat so that the resumed flow of fluid to the outlet port is, at least initially, restricted by the obturator orifice. When the valve is connected in an anti-skid braking circuit in a by-pass line for the pressure fluid source, this mode of operation can be arranged to limit the rate of rise and fall of braking pressure during anti-skid braking modulation.

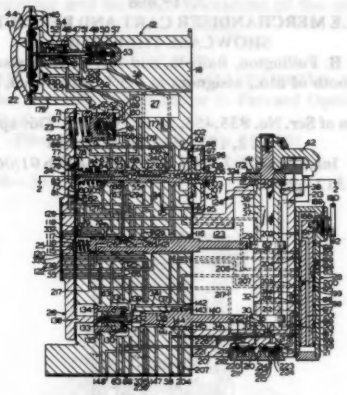


3,719,402

FLUID PRESSURE BRAKE CONTROL APPARATUS

Glenn T. McClure, McKeesport, and Robert B. Salton, Pittsburgh, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Sept. 17, 1971, Ser. No. 181,296
Int. Cl. B60t *15/18*
U.S. Cl. 303—35 **15 Claims**



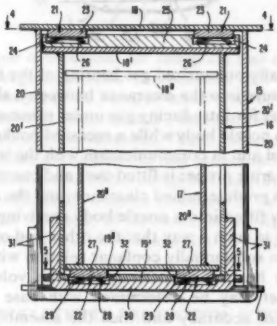
This invention relates to a relay-type brake valve device for controlling pressure variations in the brake pipe of a railway fluid pressure brake control system having a self-lapping regulating valve device for supplying fluid under pressure directly to a relay valve device to cause the operation thereof. The regulating valve device is operative in a fluid pressure releasing direction by the rocking in one direction of a pivoted lever in response to rotation of either a service cam rotatable by manual actuation of a brake valve handle or a penalty cam rotatable by a fluid pressure operated penalty and split reduction valve in response to a restrictive train operating condition. A fluid pressure operated clutch mechanism, including a nut and screw each provided with a non-self-locking type of screw thread, is so interlocked with the lever that, in the absence of the supply of fluid under pressure to this clutch, it prevents the rocking of the pivoted lever in the above-mentioned one direction. The brake valve device further includes a new and improved three-position selector valve device for conditioning the brake valve device for use in either freight or passenger service by controlling the supply of fluid under pressure to this clutch. Therefore, the novel three-position selector valve device, while in its freight position, so cooperates with the usual suppression valve device of the brake valve device as to prevent the supply of fluid under pressure to the clutch mechanism until the handle of the brake valve device is manually returned to its release position. Consequently, this new selector device, while in its freight position, provides for operation of the clutch to insure only a direct brake release on the locomotive and cars in the train, and while in its passenger position, provides for operation of the clutch to enable a graduated release.

3,719,403

CRANE BOOM HAVING WEAR PADS

Fu-Tien Sung, Waynesboro, Pa., assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Nov. 17, 1970, Ser. No. 90,320
Int. Cl. F16c *25/02*
U.S. Cl. 308—3 **5 Claims**



Wear pads or bearings for telescoping crane booms consists of units on the rear and top and forward end and bottom of adjacent telescoping sections. Each wear pad unit comprises plural wear pad or plate sections floatingly mounted on cushioning elements within a retainer. The strength or spring constant of the cushioning elements may vary within the units to meet conditions of varying stress. The wear pad units are self-adjusting to accommodate inherent angularity between telescoping boom sections.

3,719,404

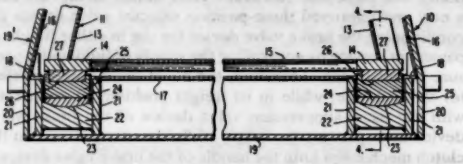
CRANE BOOM HAVING UNIVERSALLY SWIVELED WEAR PADS

Russell L. Sterner, Greencastle, Pa., assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Nov. 17, 1970, Ser. No. 90,377
Int. Cl. F16c *25/02*
U.S. Cl. 308—3 **7 Claims**

The lower wear pads of multi-section telescoping crane booms comprise assemblies located on the forward end and bottom of each boom section. Each such assembly consists of a support housing for a pair of laterally spaced wear pad units and within the support housing are retainer means for each wear pad unit. Each unit includes low friction wear pad ele-

ments for direct frictional engagement with the bottom face of the next innermost boom section and spherically curved



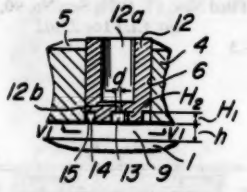
universally self-adjusting seating means for the wear pad elements.

3,719,405

GAS BEARING

Hideki Izumi; Ryoichi Ichikawa; Hiroshi Koike, and Katsuyuki Tanaka, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 13, 1971, Ser. No. 106,226
Claims priority, application Japan, Jan. 21, 1970, 45/5086
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **1 Claim**



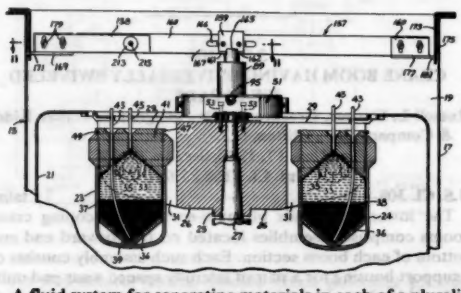
In an externally pressurized gas bearing of the type forcing gas under pressure into the clearance between a shaft and the bearing, an inlet for introducing gas under pressure is formed in one end of a nozzle body while a recessed pocket is formed in the other end and in communication with the inlet through an orifice; a bearing proper is fitted over and concentrically of the shaft with a predetermined clearance; and the nozzle body is hermetrically fitted into a nozzle body receiving hole in the bearing proper in such a way that the other end of the nozzle body may be in substantially coplanar relation with the inner surface of the bearing proper, so that the volume of the recessed pocket may be determined with ease yet with a higher degree of accuracy and thus the assembly is greatly simplified as compared with the prior art bearing.

3,719,406

BEARING MECHANISM FOR CENTRIFUGE ASSEMBLY

Charles A. Schlutz, Glenview; Stanley J. Sedivy, Chicago Ridge, and Charles R. Memhardt, Morton Grove, all of Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Division of Ser. No. 713,595, March 18, 1968, Pat. No. 3,561,672. This application Nov. 16, 1970, Ser. No. 97,407
Int. Cl. F16c *35/02*
U.S. Cl. 308—15 **4 Claims**



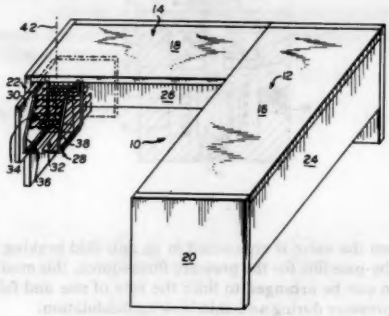
A fluid system for separating materials in each of a plurality of batches which are simultaneously washed by forcing a fluid through a centrifuge, provides independent pressure heads for each batch to enable flow of equal volumes through said batches, respectively.

3,719,407

DESK CONFIGURATION HAVING STATIONERY ORGANIZER

David Woods, Quakertown, Pa., assignor to J. G. Furniture Company, Inc., New York, N.Y.

Filed May 17, 1971, Ser. No. 143,871
Int. Cl. A47b *17/00, 19/00, 88/00*
U.S. Cl. 312—197 **4 Claims**



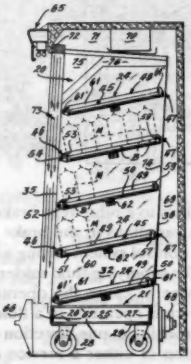
A desk configuration has a stationery organizer which is pivotally mounted beneath a work surface portion of the desk configuration in a storage position, the organizer being substantially recessed from the vertical plane of the front edge of the work surface in this position. The stationery organizer is pivotal about a vertical axis between this storage position and a usage position in which the organizer extends beyond the front edge vertical plane.

3,719,408

MOBILE MERCHANDISER CART AND REFRIGERATED SHOWCASE THEREFOR

William H. Fullington, Ballwin, and Melvin O. Maisak, Florissant, both of Mo., assignors to Pet Incorporated, St. Louis, Mo.

Division of Ser. No. 835,455, June 23, 1969. This application Feb. 2, 1971, Ser. No. 111,898
Int. Cl. A47b *77/08*; A47f *3/04*; A47b *91/00*
U.S. Cl. 312—236 **2 Claims**



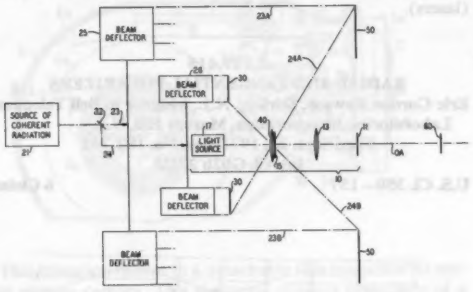
The combination of a mobile merchandiser cart for the transportation, storage and display of food and beverage products from the production source to the retail consumer, and a refrigerated showcase having a cart product area for receiving a merchandiser cart with a complementary fit.

3,719,409

ARRAY OF FOCUSING HOLOGRAMS

Charles James Vincelette, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Nov. 16, 1971, Ser. No. 199,196
Int. Cl. G02b 27/22
U.S. Cl. 350—3.5 7 Claims



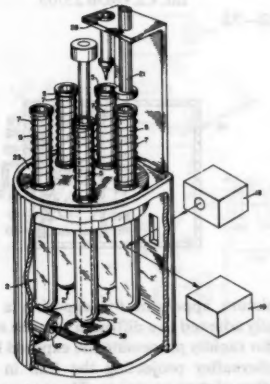
An array of light focusing holograms is disclosed, that is particularly useful in recording a hologram memory. Like the array of focusing holograms in U.S. Pat. 3,530,-442, each of these holograms is formed so that it directs light through a page of digital data to a different portion of a plane where the hologram memory is recorded. In addition, however, each hologram is also formed so that it directs light through only those portions of the data page where information can be found. Moreover, the light focussing holograms are also designed to reduce the aberrations that would otherwise be encountered in recording a hologram memory at points not on a normal to the data page. Additional features of this disclosure make possible the convenient substitution of one data page for another and the efficient readout of the memory.

3,719,410

MIXING AND MEASURING APPARATUS

Eli A. Kallet, Teaneck, N.J., assignor to Farrand Optical Co., Inc., Valhalla, N.Y.

Filed Nov. 10, 1971, Ser. No. 197,501
Int. Cl. G01n 21/52, 1/00
U.S. Cl. 356—36 8 Claims



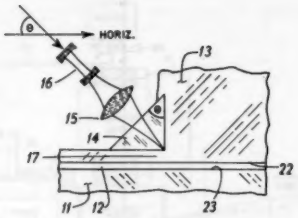
Disclosed is a mixing device and measurement apparatus suitable for use in the kinetic photometric analysis of enzymes and other substances. The mixing apparatus includes a test cell having a base container for holding one reactant solution and having a mixing container for holding another reactant. To mix the reactants and initiate the reaction, the mixing container is forced into the base container whereby the solution is transferred between containers.

3,719,411

CONTINUOUS COUPLING OF TUNABLE OR BROAD BAND RADIATION INTO THIN FILM WAVEGUIDES

John Edwin Midwinter, Morristown, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed March 17, 1971, Ser. No. 125,094
Int. Cl. G02b 5/14
U.S. Cl. 350—96 WG 3 Claims



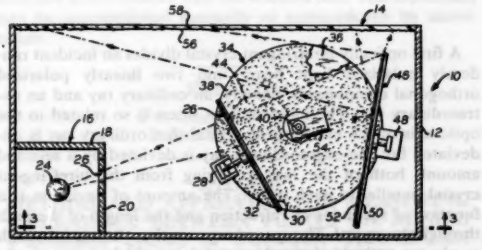
A technique is described for designing and constructing a thin-film waveguide/coupler combination that will allow the continuous coupling of a beam of broad band or tunable radiation from a laser-like source into a thin-film waveguide that is deposited on a suitable substrate. This is achieved by selection of a combination of materials having proper refractive indices in a sandwich structure which comprises the waveguide resulting in high efficiency without resource to any mechanical realignment of the angle of incidence of the light beam relative to the waveguide as the frequency to be coupled varies.

3,719,412

BACKLIGHTED PROJECTION SCREEN

Earl M. Reiback, 20 East 9 Street, New York, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,310
Int. Cl. G03b 21/56
U.S. Cl. 350—117 6 Claims

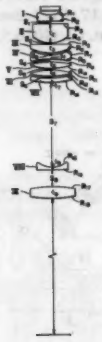


Apparatus for projecting continuously variable, multicolored, random patterns of light onto a translucent screen, and includes a lamp and the translucent screen. The screen is preferably transparent plastic containing a light absorbent dye and having a matte front and sandblasted rear surface.

3,719,413
INVERTED TELEPHOTO PROJECTION LENSES

Hadrian B. Lechner, North Chili, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Feb. 11, 1972, Ser. No. 225,493
Int. Cl. G02b 9/64
U.S. Cl. 350—214 3 Claims

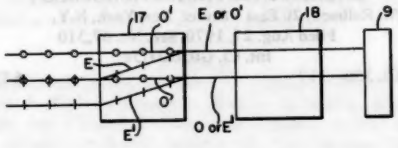


An improved inverted telephoto lens having a seven element positive group separated from a two element negative group.

3,719,414
POLARIZATION INDEPENDENT LIGHT MODULATION MEANS USING BIREFRINGENT CRYSTALS

John L. Wentz, Ellicott City, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 28, 1970, Ser. No. 67,930
Int. Cl. G02f 1/26
U.S. Cl. 350—150 1 Claim

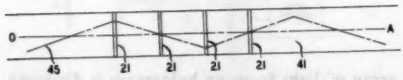


A first optically birefringent crystal divides an incident randomly polarized light beam into two linearly polarized orthogonal components, namely, an ordinary ray and an extraordinary ray. The incident light beam is so related to the optic axis of the birefringent crystal that ordinary ray is undeviated but the exgraordinary ray is deviated by a selected amount, both of the rays emerging from the birefringent crystal parallel to each other. The amount of deviation is a function of the index of refraction and the length of the path through the crystal. The spaced rays are then directed through an electro-optical polarization modulator which electronically converts the linearly polarized components to elliptically polarized beams with the eccentricity dependent upon the magnitude of an applied electric field. For a particular magnitude of applied electric field, the polarization modulator will cause a 90° rotation of the orthogonal components. The two emerging rays are then passed through a second birefringent crystal which recombines the two rays with the intensity along the emerging axis proportional to the magnitude of the electric field applied to the polarization modulator. In the unenergized state of the polarization modulator maximum transmittance is obtained. In the energized state the transmittance varies according to $T = \sin^2 KE$ where E is the magnitude of the applied electric field and K is a proportionality constant. Thus, the light modulation system can be controlled electronically to make it selectively transmissive for incident light of all polarizations. The system is also described as applied to a resonant optical cavity such as a Q-switching device for randomly polarized stimulated emission of radiation devices (lasers).

3,719,415
RADIAL AND TANGENTIAL POLARIZERS

Eric Gordon Rawson, Stirling, N.J., assignor to Bell Telephone Laboratories, Incorporation, Murray Hill, N.J.

Filed Sept. 22, 1971, Ser. No. 182,741
Int. Cl. G02b 27/28
U.S. Cl. 350—157 6 Claims

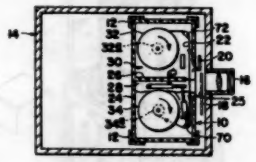


Radial and tangential polarizers selectively attenuate meridional or skew rays in a focusing waveguide. A radial polarizer is a polarizer in which the direction of polarization at any point in the polarizer is approximately parallel to a radial line from the center of the polarizer. A tangential polarizer is a polarizer in which the direction of polarization at any point in the polarizer is approximately perpendicular to a radial line from the center of the polarizer. A pair of radial polarizers or a pair of tangential polarizers spaced apart at an odd multiple of one-fourth of the period of oscillation of a meridional ray about the center of the optical path attenuate skew rays in favor of meridional rays. A radial polarizer and a tangential polarizer similarly spaced attenuate meridional rays in favor of skew rays.

3,719,416
MOTION-PICTURE SYSTEM

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 738,464, June 20, 1968, Pat. No. 3,655,277. This application March 19, 1971, Ser. No. 126,307
Int. Cl. G03b 23/03
U.S. Cl. 352—72 17 Claims

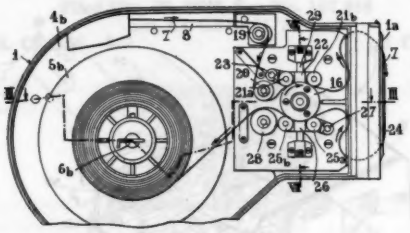


Motion-picture apparatus for exposing a motion-picture film especially adapted to a diffusion transfer method of image formation; for rapidly processing the exposed film; and for immediately thereafter projecting the film in the form of a finished motion-picture sequence. The system includes, for an improved operation, a unique multi-purpose cassette or magazine usable both in a camera component for the taking function and in a projection component for processing and projection purposes.

3,719,417
DETACHABLE FILM MAGAZINE FOR MOTION PICTURE CAMERA

Jacques Lecoeur, Paris, France, assignor to Eclair International, Paris, France

Filed Aug. 5, 1971, Ser. No. 169,258
Claims priority, application France, Feb. 8, 1971, 7104076
Int. Cl. G0b3 *23/00*
U.S. Cl. 352—78 R **3 Claims**

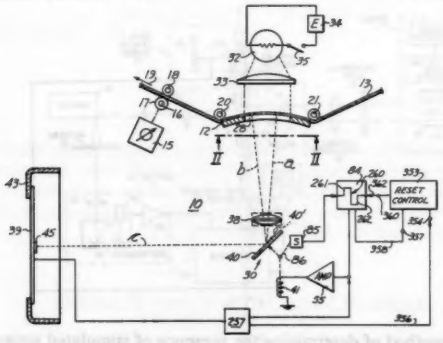


This invention relates to a detachable film magazine for motion picture camera. This magazine consists essentially of a flat box having detachable major faces. An intermediate partition parallel to said faces divides the box into a first compartment and a second compartment. The first compartment encloses the feed spool and means for guiding the film towards a slot formed in said intermediate partition for transferring the film to the second compartment. This second compartment encloses a drive sprocket actuated from the camera motor, a take-up spool and means for guiding the film emerging from said transfer slot along a first peripheral zone of said sprocket, then along the outer face of the front wall of the magazine, which is adapted to be locked to the rear face of the camera, and finally along a second zone of said sprocket towards the take-up spool.

3,719,418
RESET CONTROL PARTICULARLY FOR OPTICAL COMPENSATORS

Robert F. Johnston, Wildwood, and Kenneth L. Hendrickson, Niles, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Aug. 27, 1971, Ser. No. 175,482
Int. Cl. G03b *41/10*
U.S. Cl. 352—109 **29 Claims**

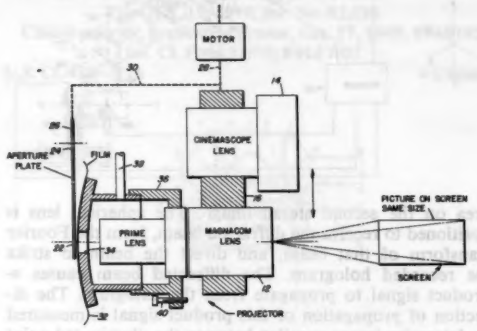


A repeatedly advanced device, such as an optical compensator or rectifier in continuous film feed motion picture apparatus, is reset between successive advancements with the aid of resetting energy. Errors in the resetting of the device are sensed and an error signal is controlled with the error signal to correct errors in the resetting of the device.

3,719,419
SELECTIVE SINGLE LENS PROJECTING SYSTEM

Lawrence W. Davee, c/o Century Projector Corporation, 165 West 46th Street, Tenafly, N.J.

Filed Dec. 10, 1970, Ser. No. 96,923
Int. Cl. G03b *3/00, 21/14*
U.S. Cl. 353—101 **3 Claims**



The projector system includes in combination with the prime focusing lens and film aperture for projecting a picture of desired dimensions through a single removable lens onto a screen, at least one additional single lens having a different curvature for changing the enlargement of the image on the screen, said additional lens being movably mounted for selective use in place of said first single lens when the corresponding image enlargement is desired, therebeing an additional corresponding aperture for use with each of the additional lenses, of suitable format to project a picture on the screen of substantially the same size for each image enlargement. Each additional lens is mounted for proper spacing in front of the prime lens to change the image enlargement correspondingly without requiring any focusing adjustment of the prime lens. The single lenses are mounted on a turret or slide mounting for selective interposition in front of the prime lens, and the mounting is connected to an aperture plate having the different apertures for moving them selectively into operative positions in accordance with the selected lens. This movement may be accomplished manually or automatically by motor means.

ERRATUM

For Class 356—36 see:
Patent No. 3,719,410

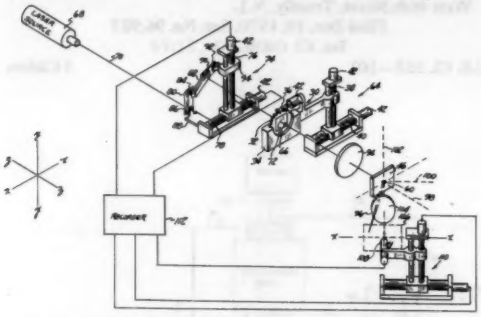
3,719,420
METHOD AND APPARATUS FOR MEASURING PARALLAX BETWEEN POINTS ON STEREO IMAGES USING A FOURIER TRANSFORM HOLOGRAM OF ONE OF THE IMAGES

Stanley J. Krulikoski, Jr., 214 Meridan, Dearborn, Mich. 48124, and Juan C. Dawson, 1393 E. Easter Circle, Littleton, Colo.

Filed May 13, 1971, Ser. No. 142,962
Int. Cl. G01c *11/12*
U.S. Cl. 356—2 **16 Claims**

The method and apparatus of this invention can be used to measure parallax between points of stereo images

that are rotated with respect to each other as well as coplanar stereo images. The parallax between conjugate points on first and second stereo images of a scene is measured by recording a Fourier transform hologram of the first stereo image and aligning the recorded hologram with the second stereo image. Measurements in image parallax are made by directing a thin beam of laser light to strike and be diffracted by a point or small



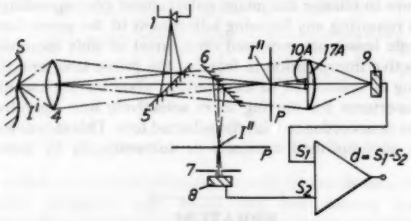
area on the second stereo image. The spherical lens is positioned to receive the diffracted beam, form the Fourier transform of that beam, and direct the beam to strike the recorded hologram. The diffracted beam causes a product signal to propagate from the halogram. The direction of propagation of this product signal is measured to determine image parallax between the illuminated point of the second stereo image and the conjugate of that point of the first stereo image.

3,719,421

OPTICAL DEVICE FOR DETERMINING THE POSITION OF A POINT ON A SURFACE

Jean-Loup Poilleux, Vanves, and Jean Tourret, Montrouge, both of France, assignors to Compagnie des Compteurs, Paris, France

Filed Dec. 10, 1971, Ser. No. 206,602
Claims priority, application France, Dec. 10, 1970, 7044512
Int. Cl. G01c *3/08*
U.S. Cl. 356—4 **9 Claims**



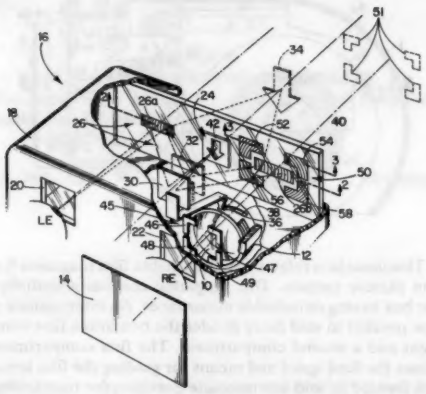
The optical device comprises a luminous source and an optical system for forming a primary image of the source on the surface whose position is to be determined. The optical system returns some of the light back from the primary image. A beam splitter is provided for splitting the returning light into two beams directed towards two secondary image points. Two optical elements are disposed respectively in these two beams, each optical element controlling the amount of light passing therethrough, and two photoelectric detectors are provided respectively behind the two optical elements to receive the light passing through. Preferably one of the optical elements is a field lens having a central screen, and the other optical element is a diaphragm having a central aperture of the same diameter as the screen. Alternatively both the optical elements can be constituted by field lenses each having a central screen.

3,719,422

A BINOCULAR RANGEFINDER-VIEWFINDER WITH FRESNEL OPTICS

Edwin H. Land, Cambridge, and Philip R. Norris, North Reading, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 20, 1971, Ser. No. 108,084
Int. Cl. G01c *3/04, 3/14;* **G03b** *13/02*
U.S. Cl. 356—8 **13 Claims**



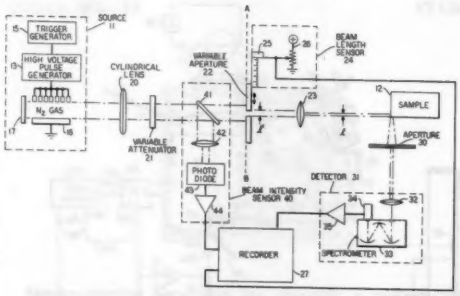
This disclosure depicts a number of novel Fresnel imaging structures incorporated in photographic rangefinding and viewfinding means. Each Fresnel imaging structure is both focal and afocal for simultaneously providing a view of a selected field and for projecting into the field a virtual image of a rangefinding or framing reticle.

3,719,423

METHOD OF DETERMINING THE PRESENCE OF STIMULATED EMISSION OR OF MEASURING THE NET GAIN IN MATERIALS FOR LASERS

Robert Francis Leheny, Little Silver, and Kerry Lee Shaklee, Sea Bright, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

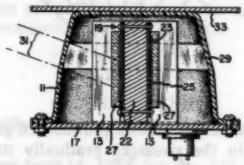
Filed Feb. 3, 1971, Ser. No. 112,237
Int. Cl. G01n *21/00*
U.S. Cl. 356—36 **8 Claims**



A method of determining the presence of stimulated emission or of measuring the net gain in materials, typically solid materials for lasers, is disclosed. Basically, the technique involves pumping the material to be tested with a beam of radiation to excite a volume therein of variable length, *l*, and comparing the luminescent output emitted along the length, *l*, and from an edge of the excited volume, for various values of *l*. If

the output varies approximately as an increasing exponential function of the length, an excess of gain over loss is being obtained. A net gain calculation for the material is then straightforward.

3,719,424
RADIANT ENERGY SENSOR
Richard C. Weischedel, Camillus, N.Y., assignor to General Electric Company
Filed Dec. 28, 1970, Ser. No. 101,865
Int. Cl. G01b *11/26*
U.S. Cl. 356—141 **7 Claims**

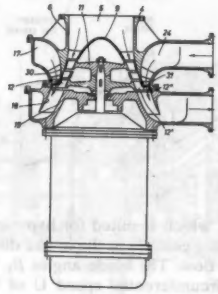


A radiant energy sensor for determining light source location, more particularly for determining the angle of elevation of a nuclear burst by measuring the angular inclination of the line of sight to the center of light output resulting from the burst. This is accomplished by provision of a pair of radiant energy sensor elements mounted in vertical arrayed relationship behind an aperture aligned with the upper of the two sensor elements, so that with different angles of elevation of the light source there occurs a differential change in the illuminated areas of the two sensor elements and a corresponding change in the ratio of their respective signal outputs, which may be measured to yield an indication of elevation angle. For coverage of the entire azimuth a plurality of such sensor pairs may be provided in circular array, with signal processing means being provided for selection or combination of those of the sensor outputs which are to be made determinative in the elevation angle measurement.

3,719,425
APPARATUS FOR MEASURING THE DIMENSION OF AN OBJECT
Ludwig Leitz and Willi Horn, Wetzlar, Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany
Filed May 15, 1970, Ser. No. 37,775
Claims priority, application Germany, May 20, 1969, P 19 25 587.9
Int. Cl. G01b *11/10*
U.S. Cl. 356—159 **2 Claims**

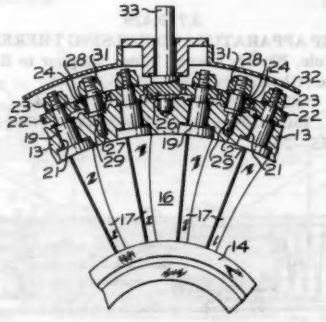
A method of measuring the dimension of an object, for example the diameter of spinning fibres, comprises the steps of employing a Töpler optical arrangement and introducing the object into a beam of parallel light rays. The Töpler optical arrangement comprises a light source together with optical means for generating a beam of parallel light rays and a beam trap for absorbing those parallel rays. The light rays reflected from the parallel path by the object are conducted to a photoelectric receiver which provides an electrical output signal responsive to the intensity of the deflected light rays. This intensity being a measure of the dimension of the object.

3,719,426
SUPERSONIC COMPRESSORS WITH CONICAL FLOW
Jean-Marie Eugene Friberg, Bourge-la-Reine, and Jean-Marie Merigoux, Palaiseau, both of France, assignors to Societe Alsacienne De Constructions Atomiques De Telecommunications Et D'Electronique "Alcatel", Paris, France
Filed Oct. 19, 1970, Ser. No. 82,026
Claims priority, application France, Oct. 17, 1969, 6935743
Int. Cl. F04d *31/00;* **F01d** *1/02*
U.S. Cl. 415—116 **4 Claims**



In an axial supersonic compressor with conical flow, compressing of two flows occurs together, only in that portion of their course in the mobile wheel where they are compatible in terms of pressure. The compressor thus makes it possible to subject two flows, which are compatible in terms of pressure, to two different compression ratios in one and the same compression stage, either upstream or downstream from this stage.

3,719,427
VARIABLE AREA NOZZLE FOR TURBINES OR COMPRESSORS
Warren W. Davis, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed March 22, 1971, Ser. No. 126,688
Int. Cl. F01b *25/02*
U.S. Cl. 415—147 **6 Claims**



A variable area nozzle assembly arranged in an annular housing adjacent a rotor. In order to accurately position movable vanes in the nozzle while compensating for the effects of wear or heat distortion in the nozzle assembly, bevel

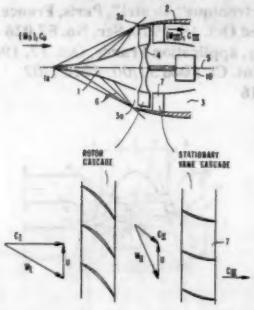
bears are secured to the vanes and intermediate bevel gears are arranged therebetween with springs axially urging the gears into positive engagement with each other.

3,719,428

JET ENGINE FOR HYPERSONIC INTAKE VELOCITIES

Wilhelm Heinrich Dettmering, am Chorusberg 26, Aachen, Germany

Filed March 13, 1970, Ser. No. 19,418
Claims priority, application Germany, March 14, 1969, P 19 13 028.0
Int. Cl. F01d 1/02; F02k 3/00
U.S. Cl. 415—181 14 Claims



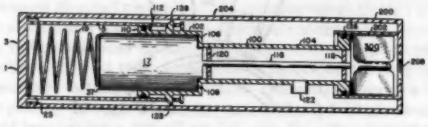
A jet engine, which is suited for hypersonic intake velocities, has a rotating cascade in the intake duct for decelerating the hypersonic flow. The blade angles β_1, β_2 of the rotating cascade, the circumferential speed U of the rotor and the deceleration Δw of the relative cascade flow are matched in accordance with $\cos \beta_2 = (U \cdot \cos \beta_1)/(U - \Delta W \cdot \cos \beta_1)$, to ensure an axial direction of the absolute flow at the rotor cascade exit. A stationary vane cascade can be arranged downstream of the rotor cascade, in the case of high blade camber, for further deceleration and axial straightening of the flow. The intake rotor can be coupled to an engine accessory power unit or to a compressor arranged downstream of the intake. Controllable flaps can be provided to route the gas jet leaving the engine combustion chamber either to a turbine arranged downstream for driving the compressor or directly to the engine outlet nozzle. The intake rotor can also be coupled to an acceleration cascade arranged downstream of the combustion chamber; the acceleration cascade can also be preceded by a stationary vane cascade.

3,719,429

PUMP APPARATUS AND HOUSING THEREFOR

Clinton Rule, Beverly Farms, Mass., assignor to Rule Industries, Inc., Gloucester, Mass.

Filed Oct. 7, 1971, Ser. No. 187,344
Int. Cl. F01d 1/02; F04b 17/00, 35/04
U.S. Cl. 415—201 13 Claims



There is described an impeller pump assembly and particularly an impeller pump housing characterized by simple and rapid assembly and disassembly thereof.

3,719,430

DIFFUSER

Lawrence William Blair, Boxford, and Alexander Connor Bryans, Reading, Mass., assignors to General Electric Company

Filed Aug. 24, 1971, Ser. No. 174,335
Int. Cl. F01d 1/02; F03d 1/04; F04d 29/40
U.S. Cl. 415—207 5 Claims

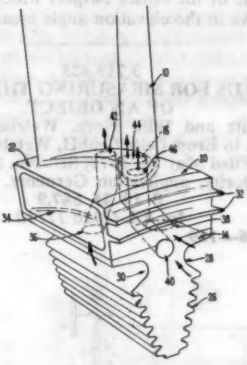
A diffuser annulus includes a plurality of passages therethrough, wherein the passages gradually merge radially outward from a curvilinear cross-section to a rectilinear cross-section. The diffuser annulus may be optimized for maximum efficiency by varying the axially extending width of the passages at the outer periphery of the annulus independently of the diameter of the passages at the inner periphery of the annulus.

3,719,431

BLADES

Thomas Steele, Littleover, George Oswald Eccles, Sidpton, and Douglas Herbert Williamson, Derby, England, assignors to Rolls-Royce Limited, Derby, England

Filed Sept. 25, 1970, Ser. No. 75,545
Claims priority, application Great Britain, Sept. 26, 1969, 47,612/69
Int. Cl. F01d 5/18
U.S. Cl. 416—96 4 Claims



This device concerns a hollow gas turbine engine blade being provided with a solid metal blade stub, the joint between the hollow blade and stub being reinforced by providing a reinforcement collar which is attached to both the stub and the hollow blade.

3,719,432

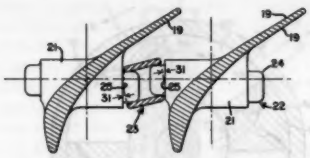
ARTICULATED SLEEVE FOR TURBINE BUCKET LASHING

Victor S. Musick, Scotia, and Bernard E. Fontaine, Burnt Hills, N.Y., assignors to General Electric Company

Filed Apr. 23, 1971, Ser. No. 136,884
Int. Cl. F01d 5/22
U.S. Cl. 416—196 5 Claims

A blade lashing device for a turbine wheel having closely adjacent blades formed with a lug on each blade face.

A sleeve is interposed between lugs on opposing blade faces to connect turbines blades. The sleeve is formed

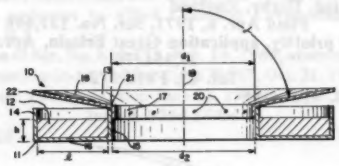


with clearances so that it will form an articulated joint between interconnected turbine blades.

3,719,433
GETTER DEVICE

Elio Rabusin, Milan, Italy, assignor to S.A.E.S. Getters S.p.A., Milan, Italy

Filed April 14, 1971, Ser. No. 133,992
Claims priority, application Italy, Apr. 21, 1970, 86251/70; Apr. 21, 1970, 28834/70
Int. Cl. F04b *37/02*
U.S. Cl. 417—48 **22 Claims**

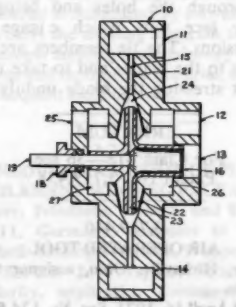


A getter device comprising an annular ring having (1) an outer wall, (2) an inner wall, and (3) a bottom wall joining the outer wall with the inner wall; a getter metal vapor releasing material in the annular ring; and a deflector for the getter metal vapor. Certain embodiments provide for a separate deflector; other embodiments provide for a gas releasing material admixed with the getter metal vapor releasing material.

3,719,434
ROTARY EJECTOR COMPRESSOR

Michael Eskeli, 2932 Sandage Avenue, Fort Worth, Tex.

Filed March 30, 1971, Ser. No. 129,407
Int. Cl. F04b *23/04*; F04f *5/00*
U.S. Cl. 417—78 **6 Claims**

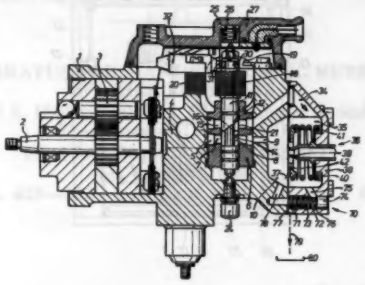


Method and apparatus for a compressor for compressing air, gases and vapors approximately isothermally by using a liquid stream to entrain and compress the gas; with the liquid being accelerated by an impeller, inner passage, and the gas initially being accelerated by vanes placed on the outside of the same impeller; the two streams are brought together and compressed by using the kinetic energy contained in the liquid stream. Further, the compressor can advantageously be used to compress vapors where the gas stream is condensed fully or in part by the liquid stream thereby decreasing the specific volume of the total fluid stream during compression, and improving the efficiency of the compression.

3,719,435
SAFETY MEANS FOR A DIFFERENTIAL PRESSURE VALVE ASSOCIATED WITH A FUEL INJECTION APPARATUS

Franz Eheim, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 3, 1971, Ser. No. 195,151
Claims priority, application Germany, Nov. 7, 1970, P 20 54 910.4
Int. Cl. F04b *49/08*
U.S. Cl. 417—307 **6 Claims**

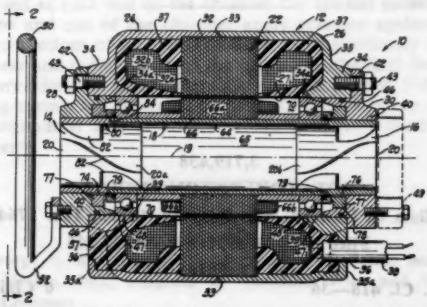


In order to protect against excessive loads the membrane of a differential pressure valve associated with a fuel metering valve of a fuel injection apparatus, there is provided a second differential pressure valve which is connected parallel with the first-named differential pressure valve and which opens to discharge pressurized fluid therefrom when the differential pressure in the first-named valve exceeds a safe magnitude.

3,719,436
AXIAL FLOW PUMP

Stanley B. McFarlin, Jeromesville, Ohio, assignor to The Gorman-Rupp Company, Cleveland, Ohio

Filed Sept. 22, 1970, Ser. No. 74,398
Int. Cl. F04b *35/04*
U.S. Cl. 417—356 **16 Claims**



An axial flow pump includes a housing supporting a tubular, electric motor driven pump body for rotation about an axis, and a plurality of impeller units detachably supported within

the tubular pump body. The impeller units are constructed to provide a substantially unobstructed axial pumping passage through the pump body and are removable from the pump body without requiring disassembly of the pump body or the housing.

3,719,437

PISTON PUMP FOR DELIVERING VISCOUS PASTES

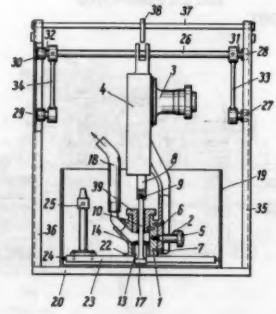
Siegfried Schuhmann, and Hans Alix, both of Offenback A.M., Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach am Main, Germany

Filed Nov. 9, 1970, Ser. No. 87,866

Claims priority, application Germany, Nov. 15, 1969, P 19 57 559.8

Int. Cl. F04b *17/09, 21/00, 39/10*

U.S. Cl. 417—360 6 Claims



A piston pump for delivering viscous fluids such as ink paste has an outlet valve in the form of a disc surrounding the pump piston rod and closing one end of the pump cylinder, the other end of the cylinder being open to form an inlet port when the piston projects beyond it at the end of the suction stroke. The outlet valve is closed by friction with the piston rod by a spring on the suction stroke and is opened by the pressure of fluid drawn into the cylinder on the working stroke. The valve and piston are quickly detachable from a drive mechanism comprising a motor and gearing which are suspended from a mounting movable vertically above a fluid container in which the pump is housed when working. The pump carries at its suction end a pressure plate which is a close sliding fit within the container wall or walls. Two or more pumps may be mounted on the same pressure plate.

ERRATUM

For Class 417—180 see:
Patent No. 3,719,524

3,719,438

ROTATING PISTON ENGINE

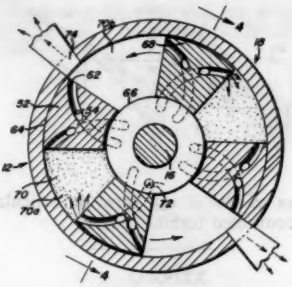
William C. Howard, P.O. Box 638, Olden, Tex. 76466

Filed Nov. 30, 1970, Ser. No. 93,745

Int. Cl. F01c *9/00*

U.S. Cl. 418—36 6 Claims

Heated gas is compressed and expanded in the working chambers formed between piston rotors which oscillate relative to each other while rotating about a drive axis. The gas is conducted into each chamber through the piston vanes and exhausted through radially outer ports in the housing. Movement of the piston rotors is synchronized and adjusted in stroke and phase by gearing to which the output shaft of the engine is connected.



3,719,439

BLADED ROTOR FOR A GAS TURBINE ENGINE

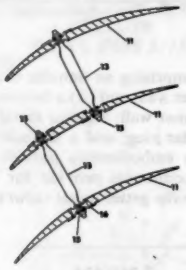
Lindsay Grahame Dawson, Castle Donington, James Alexander Petrie, Littleover, and Kenneth Edward George Bracey, Findern, England, assignors to Rolls-Royce Limited, Derby, England

Filed Apr. 6, 1971, Ser. No. 131,698

Claims priority, application Great Britain, Apr. 10, 1970, 17,154/70

Int. Cl. F01d *5/24*

U.S. Cl. 416—196 5 Claims



A bladed rotor for a gas turbine engine has a row of blades, each blade having two part spherically faced depressions on opposite faces and holes through the blade thickness which lead into the depressions. Tie members extend between adjacent blades, the ends of the tie members passing through the holes and being retained by part spherically face nuts which engage in the part spherical depressions. The tie members are thus allowed to move relative to the blades and to take up the natural position without stressing the blade unduly.

ERRATUM

For Class 418—36 see:
Patent No. 3,719,438

3,719,440

AIR OPERATED TOOL

Philip A. Snider, Hicksville, Ohio, assignor to Dotco, Inc., Hicksville, Ohio

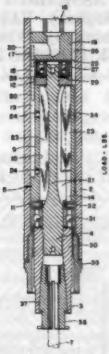
Filed April 16, 1971, Ser. No. 134,588

Int. Cl. F04c *1/00*; F03b *13/04*; B23q *5/00*

U.S. Cl. 418—266 8 Claims

An air operated tool having a rotary air motor of which the tool holding rotor is supported for high speed accurate rota-

tion by preloaded ball bearings adjacent the ends of the rotor. The tool herein is characterized in that a Belleville spring is



employed to eliminate axial play of the rotor and to preload the ball bearings to desired precise extent.

3,719,441

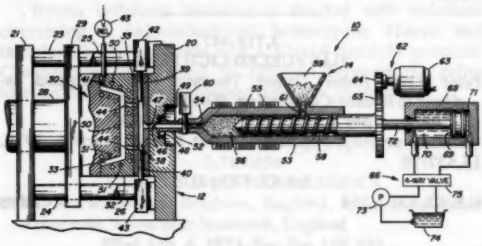
APPARATUS FOR MOLDING ARTICLES

Albert Spaak, Little Falls, and Clifford L. Weir, Wayne, both of N.J., assignors to Allied Chemical Corporation, Morristown, N.J.

Division of Ser. No. 811,271, Feb. 19, 1969, abandoned, Continuation-in-part of Ser. No. 679,387, Oct. 31, 1967, abandoned. This application June 22, 1970, Ser. No. 59,816

Int. Cl. B29d *27/04*

U.S. Cl. 425—4 **10 Claims**



This disclosure is directed to a method of for injection molding. Premature foaming and setting of foamable molding materials is prevented by accomplishing the injection of the molding material into a preheated mold cavity having a gaseous substance therein at a pressure in excess of that required to prevent foaming of the molding material. Planned wastage of molding material is minimized by providing pistons in the runners which carry the molding materials to the mold, which pistons force excess molding material away from the mold so as to recompress and recover the material, thereby to be used in the next subsequent molding cycle.

3,719,442

SIMULTANEOUS PRODUCTION OF PLURALITY OF FILAMENT WINDING PACKAGES

Heinz Schippers; Friedhelm Hensen, and Erich Lenk, all of Remscheid-11, Germany, assignors to Barmag Barmer Maschinefabrik Aktiengesellschaft, Wuppertal, Germany

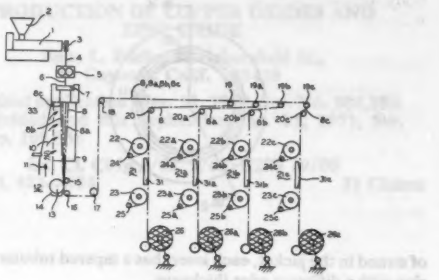
Filed Nov. 23, 1970, Ser. No. 91,850

Claims priority, application Germany, Nov. 25, 1969, P 19 59 034.2

Int. Cl. D01d *5/00*

U.S. Cl. 425—66 **8 Claims**

Simultaneous production of a large number of winding packages of filaments of flat, round or profiled cross section by apparatus including extrusion devices, at least one cooling device, guide means, after-treatment devices (stretching, heating, etc.) and winding devices.



3,719,443

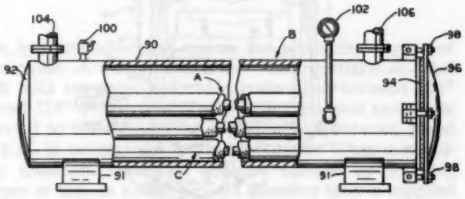
APPARATUS FOR MANUFACTURING RUBBER WASHER ELEMENTS

Harold E. Hall, Middlefield, Ohio, assignor to Stalwart Rubber Company, Bedford, Ohio

Filed Sept. 25, 1970, Ser. No. 75,452

Int. Cl. B29h *3/00*

U.S. Cl. 425—352 **7 Claims**



A method and apparatus for manufacturing annular shaped rubber washer elements wherein an uncured elongated annular rubber blang is placed between a pair of coaxial mandrels which define an open-ended annular chamber having cross-sectional dimensions equal to those desired in the finished washer elements. Piston means disposed at each end of the chamber for coaxial movement into and out of the chamber apply pressure against the end portions of the blank in order to longitudinally compress and radially expand the blank into the final desired dimensional configuration while it is being cured. Following curing, the elongated element is cut transversely to its longitudinal axis in desired widths to form washer elements.

3,719,444

EXTRUSION GUIDER

George N. Benjamin, III, and Clarence M. Pence, both of Marion, Ind., assignors to Anaconda Wire and Cable Company

Filed March 8, 1971, Ser. No. 121,643

Int. Cl. B29c *27/14*

U.S. Cl. 425—114 **2 Claims**

For extruding cable jackets with embedded strands the core

guider comprises replaceable inserts. To select a desired depth

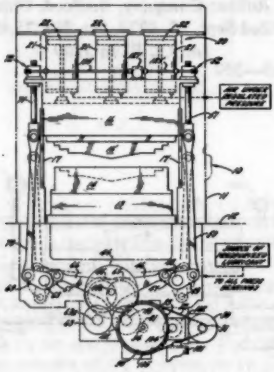
of strand in the jacket, each insert has a tapered tubular extension with a different edge thickness.

3,719,445

USE OF METAL WORKING PRESS FOR PLASTIC COMPRESSION MOLDING

William E. Sindelar, Westmont, Ill., assignor to Danly Machine Corporation, Chicago, Ill.

Filed May 10, 1971, Ser. No. 141,753
Int. Cl. B29h 5/24
U.S. Cl. 425—150 6 Claims



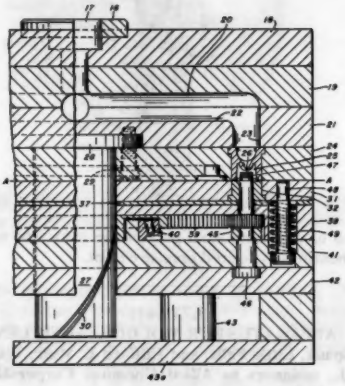
A press utilizing the press structure and controls of a metal working press but which is adapted for compression molding of large plastic parts on a production basis. Means are provided for driving the press slide slowly into bottom dead center (to be referred to herein as "dead center") position following rapid descent, for developing a high molding force, which may be substantially greater than the nominal rating of the press, and for sustaining that force during a curing interval. Pressure is reduced to a lower level to permit reestablishment of lubrication at the press bearings prior to moving the slide out of its dead center position for completion of the cycle. The hydraulic overload release device conventionally used is especially controlled to enable development of high molding pressure. In one embodiment molding pressure is developed by slow movement of the slide into its dead center position. In another embodiment the overload device is depressurized so that final movement of the slide into dead center occurs with only light loading, following which the requisite pressure is developed by pumping up the hydraulic overload release with the slide stationary. In both cases means are provided for bleeding fluid from the overload release mechanism to release the pressure on the slide before the slide begins to move out of dead center.

3,719,446

MOLD ASSEMBLY FOR PRODUCING THREADED ARTICLES WITH UNSCREWING MEANS INTEGRAL WITH THE ASSEMBLY

Bruce T. Cleevely, Allegheny, Pa., assignor to Wheeling Stamping Company, Wheeling, Ohio

Filed Dec. 22, 1970, Ser. No. 100,621
Int. Cl. B29f 1/14
U.S. Cl. 425—249 14 Claims



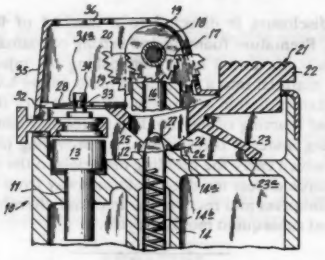
A mold assembly is detailed for use with a molding apparatus, for rapidly producing threaded molded articles. The mold assembly has unscrewing means integral with the assembly to effect unscrewing of the threaded article from the mold simultaneous with opening of the mold.

3,719,447

GAS FUELED LIGHTERS

Peter Martin Robert Dessoy, Thornton Heath, England, assignor to Ronson Corporation, Woodbridge, N.J.

Filed April 1, 1971, Ser. No. 130,306
Claims priority, application Great Britain, April 1, 1970, 15,537/70
Int. Cl. F23q 2/16
U.S. Cl. 431—254 6 Claims



A gas fueled cigarette lighter having a burner valve therein which is normally closed. The burner valve is opened to allow fuel vapors to pass therethrough by a removable plate pivotally attached to the burner valve in which the plate is actuated by a fingerpiece. The fingerpiece is fixed to the lighter casing and is pivotally mounted with respect to a ridge on the lighter which forms fulcrum. The plate has an enlarged opening therein which allows the plate to be positioned over the month of the burner valve and a narrow slot therein into which the neck of the burner valve is slid to prevent the removal of the plate from the burner valve.

CHEMICAL

3,719,448
ORGANO-PHOSPHORUS COMPOUNDS CONTAINING PERFLUOROALKYL RADICALS AND THEIR APPLICATION TO CELLULOSIC TEXTILES

Leon H. Chance, and Jerry P. Moreau, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture

Division of Ser. No. 843,200, July 18, 1969, Pat. No. 3,639,144. This application June 9, 1971, Ser. No. 151,556

Int. Cl. C07f *9/56, 9/40;* D06m *13/28*

U.S. Cl. 8—116 P 3 Claims

Perfluoroalkyl iodide monomer and telomer ester adducts of diethyl vinylphosphonate were prepared by free radical addition. Iodine of these adducts was replaced by hydrogen, and derivatives of the reduced phosphonate adducts were prepared, which include phosphonic acids, acid chlorides, and aziridinyl phosphine oxides. The aziridinyl phosphine oxides are used to impart oil and water repellency to cellulosic textiles. The other derivatives are useful as chemical intermediates as well as potential forming agents.

3,719,449
CROSSLINKED HETEROCYCLIC CELLULOSIC PRODUCTS

Jett C. Arthur, Jr., Metairie, La., Sujan Singh, Varanasi, India, and Ricardo H. Wade, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Apr. 27, 1972, Ser. No. 248,181

Int. Cl. D06m *13/20, 13/22, 13/34*

U.S. Cl. 8—120 7 Claims

Fibrous cellulosic material is reacted with solutions containing a halo-substituted heterocyclic (furan and thiophene) acid chloride and 1,3-bis(4-pyridyl) propane. Cross-linking is effected by reaction between the cellulose halo-ester groups formed and the propane.

3,719,450
STABILIZING WOVEN FABRICS

John Charles Burley, Brighton, England, assignor to Myron Ackerman, Acton near Nantwich, England

Filed Aug. 6, 1971, Ser. No. 169,740

Claims priority, application Great Britain, Aug. 20, 1970, 40,131/70; June 17, 1971, 28451/71

Int. Cl. F26b *13/10*

U.S. Cl. 8—149.2 3 Claims

Woven fabrics are stabilized by causing hot compressed air to pass at high velocity through a transverse region of a travelling or intermittently moving web of fabric for the purpose of generating static electricity in the fibers of the fabric. Subsequently the electrostatic charges are removed by moisturizing the fabric which is then dried.

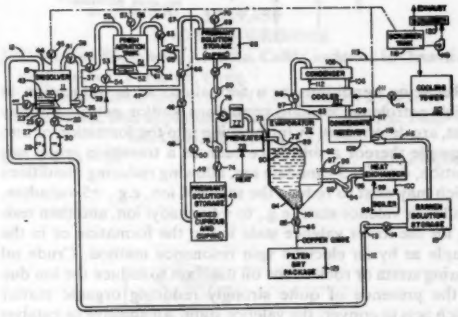
3,719,451
PRODUCTION OF COPPER OXIDES AND ZINC OXIDE

Zane L. Burke, 28 Bakersfield St., Cayucos, Calif. 93430

Original application Mar. 12, 1969, Ser. No. 806,386. Divided and this application Jan. 21, 1971, Ser. No. 108,338

Int. Cl. C01g *3/02, 9/02;* C22b *19/00*

U.S. Cl. 423—604 21 Claims



A hydrometallurgical system for producing copper or zinc oxide. A closed evaporator tank partially is filled with mild ammonia hydroxide maintained between 214° F. and 218° F. by recirculation through a heat exchanger external to the evaporator. A pressure of between 5 and 10 p.s.i. is maintained in the evaporator. When a metal-rich ammonia carbonate solution formed by leaching copper or zinc in an oxygenated dissolver tank is supplied to the ammonia hydroxide, a rapid reaction takes place, causing precipitation of the desired oxide and evaporation of NH_3, CO_2 and water. The precipitated oxides may be removed either continuously or in batches from the evaporator. The evaporated gases are condensed and reused in the leach solution. Efficient oxygenation in the dissolver is achieved using a novel aerator comprising a hollow carbon rod.

3,719,452
CARBONACEOUS MATERIAL AND METHOD OF PREPARATION

Oliver E. Accountius, Tarzana, Calif., assignor to North American Rockwell Corporation

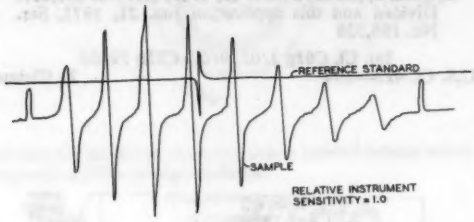
Continuation of Ser. No. 429,315, Aug. 1, 1965, abandoned. This application Dec. 1, 1969, Ser. No. 881,293

Int. Cl. C01b *31/02, 31/04, 31/36*

U.S. Cl. 23—209.2 6 Claims

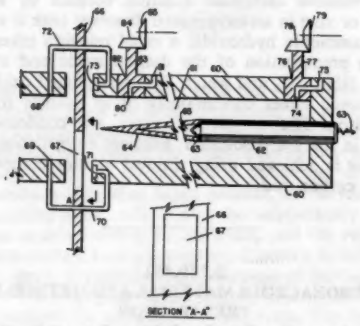
A relatively pure carbonaceous material formed by compacting polyphenylene and pyrolyzing the compacted matter. The polyphenylene can be mixed with filler material to produce heterogeneous carbonaceous structures. If the filler is silicon in a stoichiometric ratio to the carbon, silicon carbide is produced by the pyrolization.

3,719,453
DETECTION OF REDUCING CONDITIONS IN A FORMATION AS IN OIL PROSPECTING
John G. Erdman, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Nov. 25, 1970, Ser. No. 92,697
Int. Cl. G01n *27/78, 33/24*
U.S. Cl. 23—230 EP 6 Claims



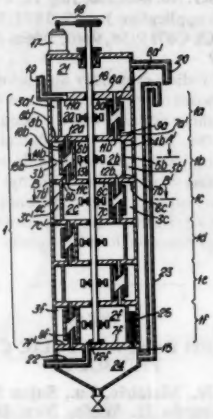
Reducing conditions in a formation, as in a location in which petroleum forming conditions and/or petroleum may exist, are determined by introducing into the formation or into a sample thereof a substance such as a transition metal salt solution, e.g., a +5 vanadate ion, allowing reducing conditions which may exist to reduce the selected ion, e.g., +5 vanadate, to a lower valence state, e.g., to +4 vanadyl ion, and then testing for the lower valence state ion in the formation or in the sample as by an electron spin resonance method. Crude oil bearing strata or rock or the oil itself act to reduce the ion due to the presence of quite strongly reducing organic matter which acts to convert the valence state. An additive or catalyst can be added to enhance the apparent reduction of the ion used, e.g., an organic base, for example, pyridine.

3,719,454
LASER CONTROLLED CHEMICAL REACTOR
Jer-Yu Shang, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.
Filed Jan. 19, 1970, Ser. No. 3,966
Int. Cl. H01s *3/00*; B01j *1/10*
U.S. Cl. 23—252 R 3 Claims



The invention involves a combination of a chemical reactor vessel and a laser cavity, said vessel having means for introducing a chemical reactant into said vessel, means for removing a reaction product from said vessel and means for recovering said reaction product in sufficiently pure form as to be a commercially valuable product, said vessel having a highly reflective interior surface and said laser cavity being coupled to said reactor whereby to enable the irradiation of said laser cavity by electromagnetic energy reflected from said surface and produced by a chemical reaction occurring within said vessel.

3,719,455
MIXER-SETTLER EXTRACTOR
Tadao Ohono, Suita, Chiaki Shimizu, Takarazuka, and Junichi Iwatani, Amagasaki, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan
Filed June 30, 1971, Ser. No. 158,228
Int. Cl. B01d *11/04*
U.S. Cl. 23—270.5 10 Claims

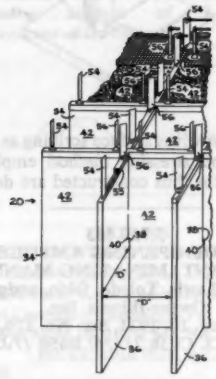


Extracting operation between two or more liquids mutually miscible only incompletely is much facilitated by employing an apparatus composed of a plurality of superimposed unit stages, any given one of which is equally divided into a cylindrical mixing compartment which is vertically stacked with mixing compartments of the remainder of the unit stages in a staggered relationship and provided with a means of agitation and an annular cylindrical settling compartment eccentrically surrounding the mixing compartment by a vertical partition having a port which provides the communication between the two compartments in the same stage, in vertical alignment which constitutes a generally cylindrical column. Said eccentric shape of the annular settling compartments affords an improved flow of liquid within the compartments and said staggered disposition of the compartments permits the provision, within the settling compartments, of projecting downtake and suction pipes connected to ports which open at the mixing compartments which allow the direct and smooth introduction of liquids from the settling compartments of the unit stages immediately above and below that given stage into the mixing compartment of that stage.

3,719,456
REACTION CHAMBER HEATED DEVICE FOR OXYGEN GENERATION
James D. Bode, Southfield, Mich., assignor to The Bendix Corporation
Filed Mar. 19, 1971, Ser. No. 125,977
Int. Cl. B01j *7/00*; C01b *13/02*
U.S. Cl. 23—281 10 Claims

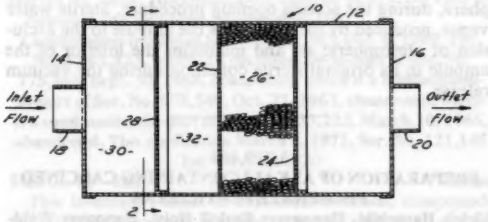
An apparatus for heating barium oxide to a reaction temperature with air to form barium peroxide. The apparatus has a housing with an air inlet passage which partially surrounds and is connected to an internal chamber. Centrally located in the internal chamber are hollow plate members interlocked by a series of frictional abutting slots to form rectangular columns. Inside of the hollow plate members between the slots a plurality

of elements are connected to a source of electricity. A blanket of electrically insulating material surrounds each element to prevent electrical energy from being transmitted to the plate members. A control switch regulates the flow of electrical energy to each element which converts the electrical energy to thermal energy. This thermal



energy is transferred through the columns to barium oxide crystals retained in the columns by mesh. As the temperature of the barium oxide crystals increases, air flow through the inlet passage and the columns forms barium peroxide while the unreacted gas and nitrogen flow through an outlet passage into the environment.

3,719,457
CATALYTIC CONVERTER STRUCTURE
Brian H. Nagamatsu, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed April 26, 1971, Ser. No. 137,349
Int. Cl. F01n 3/14; B01j 9/04
U.S. Cl. 23—288 F **2 Claims**



A catalytic converter for engine exhaust gas purification is described. The catalytic converter includes a housing having an inlet and an outlet. Upstream and downstream particulate catalytic material retention baffles are located between the inlet and outlet. Positioned in the flow channel between the housing inlet and the upstream catalyst retention baffle is a flow-control baffle having a plurality of substantially uniformly spaced openings therein, the openings being present over substantially the entire surface area of the baffle. Attrition of the particulate catalytic material is reduced.

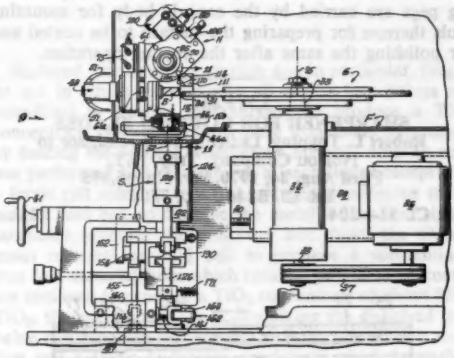
3,719,458
FUEL COMPOSITION
Raymond Cadorette, and George W. Eckert, both of Wappingers Falls, N.Y., assignors to Texaco, Inc., New York, N.Y.
Filed April 27, 1971, Ser. No. 137,981
Int. Cl. C10l 1/22
U.S. Cl. 44—72 **7 Claims**

Hydrocarbon fuel composition in the gasoline and kerosene boiling ranges having bactericidal properties containing from about 0.001 to 0.005 weight percent of an N-alkyl-substituted-1,3-propanediamine having the formula:

$$H_2N—CH_2CH_2CH_2—NRR'$$

in which R is an alkyl radical having from one to four carbon atoms and R′ is hydrogen or an alkyl radical having from one to four carbon atoms.

3,719,459
END MILL GRINDER
John Robert Southland, Arcadia, Calif., assignor to Omark Industries, Inc., Portalnd, Oreg.
Continuation of Ser. No. 717,119, March 29, 1968, abandoned. This application May 6, 1971, Ser. No. 140,972
Int. Cl. B24b 7/00, 9/00, 3/06
U.S. Cl. 51—96 **21 Claims**

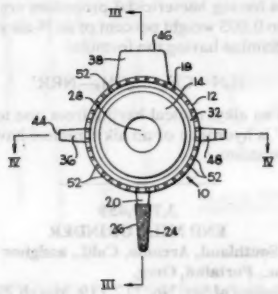


A production type machine is designed to grind end mills at a high rate while maintaining rigid standards of accuracy of dimension. Adjustments are quickly and easily made for different profiles of the ground face, the number of flutes on the mill, the size of the end mill, and so on. Operation of the apparatus is fully automatic once the grind cycle is started, after necessary adjustments are made, as only the loading and unloading operations are manually performed.

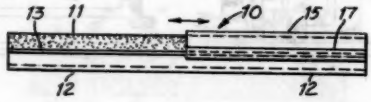
3,719,460
PAINT TOUCH-UP CAPSULE
Edwin Brockman, 31 Joseph Drive, Tonawanda, N.Y. 14242
Filed May 19, 1971, Ser. No. 144,881
Int. Cl. B24d 15/04
U.S. Cl. 51—181 **8 Claims**

A touch-up capsule comprising a narrow cylindrical wall and a pair of spaced radial walls connected at their marginal edges to the cylindrical wall to form a container for a coating composition. The radial walls are collapsible under pressure to eject the container contents outwardly through a spout formed integral with the

cylindrical wall and projecting radially therefrom. A cover for the spout is provided with abrasive material on the exterior thereof for removing rust or scale from the area to be coated. A pair of applicators formed integral with the cylindrical wall and extending radially outwardly therefrom have thin blade portions terminating in wiping edges for distributing the capsule contents on the surface to be coated. One or more radially extending pegs are carried by the capsule body for mounting tools thereon for preparing the surface to be coated and for polishing the same after the coating operation.



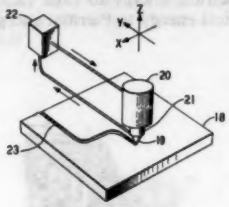
3,719,461
SHARPENER FOR CUTTING BLADES
Robert L. Topping, Littleton, N.H., assignor to Norton Company, Troy, N.Y.
Filed Aug. 24, 1970, Ser. No. 66,395
Int. Cl. B24d *5/00, 7/00*
U.S. Cl. 51—204 9 Claims



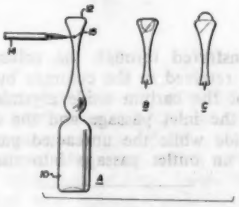
A knife sharpener having an elongated body member comprising at least one sharpening stone mounted in a base member having in sliding engagement therewith a non-coextensive cover. Thus, a handle for the sharpening stone is provided by sliding the cover from one end of the base member to the other.

3,719,462
LIGHT GUIDE PATHS COMPRISING DENSIFIED REGIONS IN A TRANSPARENT MEDIUM; AND METHOD OF PRODUCING
Peter Andreatch, Jr., New Shrewsbury, and George Myles Cordell Fisher, Holmdel, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 21, 1970, Ser. No. 99,819
Int. Cl. C03c *15/00;* C03b *21/00, 5/14*
U.S. Cl. 65—30 4 Claims

This disclosure describes a method for constructing small-scale light guide elements by achieving the needed refractive index change through a process of selective densification in the optical medium. The material immediately beneath the surface of the medium is strained a controlled amount along a desired path, producing a corresponding permanently densified zone thereunder. One stressing method involves surface scribing as by a diamond indenter. A second stressing method employs a ribbed die. Elemental paths thus constructed are described.



3,719,463
METHOD OF OPENING AMPULES IN A NON-CONTAMINATING MANNER
Albert D. Lewis, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Aug. 10, 1971, Ser. No. 170,555
Int. Cl. C03b *23/26;* B65d *1/02*
U.S. Cl. 65—113 3 Claims



A method of making ampules and releasing a partial vacuum in the glass ampule, created when glass ampules are formed from tubing, by using a small hydrogen-oxygen flame about 0.005" in port diameter to effect a self-sealing hole in the ample, and equalizing atmospheric pressure within the ampule, permitting the ampule to be opened, for filling, in a subsequent operation, without drawing glass particles into the ampule, due to the in-rushing atmosphere, during the second opening procedure. Sterile water vapor, produced by the flame, fills the ampule to the exclusion of atmospheric air and maintains the interior of the ampule in its original sterile condition during the vacuum release.

3,719,464
PREPARATION OF ALKALI CONTAINING CALCINED PHOSPHATE FERTILIZERS
Ulrich Hauschild, Hannover; Rudolf Holst, Hannover-Waldheim; Hans-Heinz Kaspers, Pattensen, and Wolfgang Dahme, Rheinbrohl, all of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany
Filed April 18, 1968, Ser. No. 722,189
Claims priority, application Germany, April 18, 1967, K 62041
Int. Cl. C05b *13/00*
U.S. Cl. 71—45 7 Claims

In the preparation of alkali-calcium phosphate fertilizers by calcination of rock phosphate, silica, and an alkali metal oxide supplying compound in a rotary kiln, the alkali metal oxide is supplied partly as alkali metal carbonate and partly as concentrated aqueous alkali metal hydroxide solution.

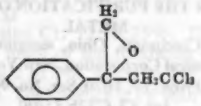
3,719,465

COMPOSITION AND METHOD FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Thomas M. Ozretich, Midland, Mich., assignor to the Dow Chemical Company, Midland, Mich.

Filed Aug. 6, 1970, Ser. No. 61,847
Int. Cl. A01n 9/28
U.S. Cl. 71—88 3 Claims

A new composition and method for controlling undesirable plant growth which comprises applying to a plant part a growth-suppressing amount of 2-(phenyl)-2-(2,2,2-trichloroethyl)oxirane of the formula:



3,719,466

PROTECTION OF WHEAT AND GRAIN SORGHUM FROM HERBICIDAL INJURY

James Ahle, Shawnee, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed April 16, 1970, Ser. No. 29,265
Int. Cl. A01n 9/20, 9/22
U.S. Cl. 71—88 5 Claims

Grain is protected from injury by 2-chloro-2',6'-diethyl-N-(methoxymethyl)acetanilide (alachlor) by coating the seeds prior to planting with a non-phytotoxic quantity of one of a small group of specific compounds. For example, grain sorghum seed may be protected by coating with a compound selected from the following group:

ethyl 2-perimidinecarboxylate
N,N-diallylpropionamide,
N,N-diallylacetamide,
1,8-didecyl naphthalate,
1,8-disodium naphthalate, and
1,8-naphthalic anhydride

and wheat is protected by coating the seed with one or more of the following compounds:

ethyl N,N-di-2-propynyloxamate, and
ethyl N,N-diallyloxamate.

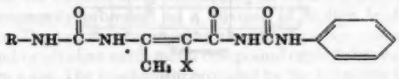
3,719,467

HERBICIDAL 3-(SUBSTITUTED UREIDO)CROTONAMIDES

Harvey M. Loux, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 882,343, Dec. 4, 1969, Pat. No. 3,664,823, which is a continuation-in-part of Ser. No. 775,568, Sept. 30, 1968, abandoned, which is a continuation-in-part of Ser. No. 678,548, Oct. 27, 1967, abandoned, which is a continuation-in-part of Ser. No. 533,223, March 10, 1966, abandoned. This application March 4, 1971, Ser. No. 121,145
Int. Cl. A01n 9/20
U.S. Cl. 71—120 7 Claims

This invention relates to herbicidal methods, compounds and compositions utilizing as an essential ingredient a compound of the following formula:



wherein

R is phenyl or o-fluorophenyl, and

X is methyl or halogen.

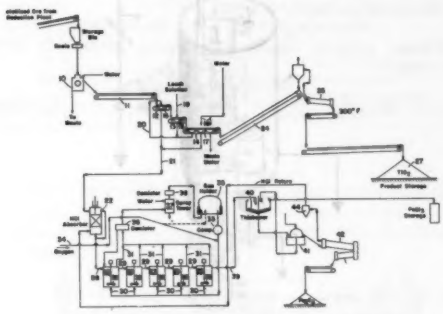
Typical of the compounds of this invention is 2-bromo-N-(phenylcarbamoyl)-3-(3-phenylureido)crotonamide which is useful as an herbicide.

3,719,468

PROCESS FOR CONTINUOUSLY LEACHING TITANIFEROUS MATERIALS

Langtry E. Lynd, North Plainfield, and Olav Moklebust, Kendall Park, N.J., assignors to N L Industries, Inc., New York, N.Y.

Filed Nov. 20, 1970, Ser. No. 91,486
Int. Cl. C22b 1/00, 3/00
U.S. Cl. 75—1 16 Claims



Reduced titaniferous materials and in particular, ilmenite ore in which substantially all of the iron values are metallized is leached continuously to produce a TiO_2 concentrate and substantially pure iron oxide by-product by feeding the reduced titaniferous material onto an endless perforated belt, discharging a leach liquor comprising a ferric salt solution onto the reduced titaniferous material on said belt to dissolve the metallic iron and simultaneously separate the dissolved iron from the titaniferous material on said belt to produce a substantially iron free material from which residual gangue constituents are removed to produce a TiO_2 concentrate of about 95% TiO_2; the spent leach liquor containing the dissolved iron being continuously regenerated to form a ferric salt solution and a ferric hydroxide precipitate which is washed and calcined to form a substantially pure iron oxide by-product, the ferric salt solution being recycled to leach additional reduced titaniferous material.

3,719,469

CONTROL FOR BASIC OXYGEN STEELMAKING FURNACE

Keith W. Roessing, Pittsburgh, Pa., assignor to Allegheny Ludlum Industries, Brackenridge, Pa.

Filed July 22, 1970, Ser. No. 57,090
Int. Cl. C21c 7/04, 7/06
U.S. Cl. 75—60 6 Claims

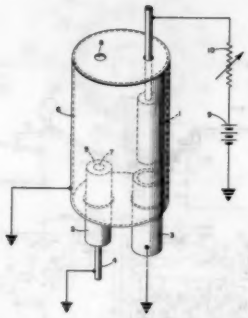
Method for controlling the refining of a molten bath of steel in a basic oxygen vessel by the steps of continually measuring the intensity of the flame at the mouth of the vessel and the flow rate of oxygen into the vessel, determining from a consideration of flame intensity drop-off a bench mark signaling that the oxygen blow and carbon removal processes are in the final stages, computing the amount of carbon remaining in the bath and the carbon removal rate at the bench mark, and thereafter periodically computing the amount of carbon left in the bath until computed carbon left matches the desired carbon content in the refined steel, whereupon the oxygen blow is terminated.

3,719,470

PROCESS AND DEVICE FOR THE FABRICATION OF ALLOYS

Emile Vanderschueren, Petten, Netherlands, assignor to European Atomic Energy Community (Euratom), Kirchberg, Luxembourg

Filed Apr. 24, 1970, Ser. No. 31,719
Claims priority, application Luxembourg, Apr. 29, 1969, 58,530
Int. Cl. C22b *9/14;* C21c *7/10;* C22c *1/00*
U.S. Cl. 75—65 2 Claims



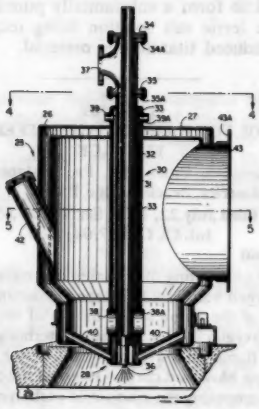
A process for making alloys is disclosed wherein the alloying is carried out in a vacuum of at least 10^{-4} torr. One of the substituents is in ionized vapor form and is deposited upon a vertically placed substrate containing the rest of the alloy ingredients. The substrate is kept at a temperature equal to the melting point of the desired alloy which falls by gravity into a container.

3,719,471

ANTI-POLLUTION BURNER SYSTEM

William D. Jones, Point Pleasant, N.J., assignor to American Metal Climax, Inc., New York, N.Y.

Filed Jan. 23, 1970, Ser. No. 5,250
Int. Cl. C22b *9/00, 15/14;* C21b *3/04*
U.S. Cl. 75—65 1 Claim



A system is provided for recovering copper from insulated copper scrap containing electrical insulation of the type comprising plastic, rubber and the like which, upon being thermally decomposed and partially combusted, forms a waste gas which may pollute the atmosphere. The scrap is thermally treated in a cupola to form blister copper and the thermally decomposed insulation is separated as a waste gas and passed through an after burner where it is substantially completely combusted and the effluent gas therefrom then scrubbed and passed through an electrostatic precipitator following which it is vented to the atmosphere as relatively clean gas.

3,719,472

PROCESS FOR THE PURIFICATION OF BERYLLIUM METAL

Frank Lerman, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Nov. 17, 1070, Ser. No. 90,307
Int. Cl. C22b *35/00*
U.S. Cl. 75—84 12 Claims

Beryllium metal is produced from impure beryllium or in situ reduced beryllium containing materials by solid phase separation from a molten mixture of beryllium-rich aluminum and/or silicon.

3,719,473

REMOVAL OF MERCURY FROM WATER USING NUT WASTES

Anthony C. Waiss, Jr., Pinole, Judith A. Kuhnle, Alameda, and Mabry Eileen Wiley, El Cerrito, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

Filed June 18, 1971, Ser. No. 154,369
Int. Cl. C22b *43/00*
U.S. Cl. 75—121 13 Claims

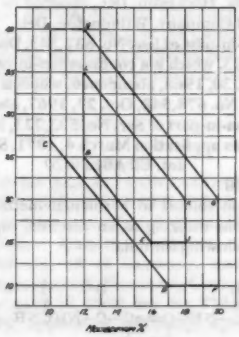
Mercury is effectively removed from water by contact with a nut waste such as peanut skins, walnut expeller meal, peanut hulls, and the like.

3,719,474

ULTRA HARD IRON-COBALT-MOLYBDENUM-NICKEL ALLOYS

Clarence George Bieber, Suffern, N.Y., and John Raymond Mihalisin, North Caldwell, N.J., assignors to The International Nickel Company, Inc., New York, N.Y.

Original application Sept. 7, 1966, Ser. No. 577,683, now Patent No. 3,485,620, dated Dec. 23, 1969. Divided and this application Nov. 6, 1969, Ser. No. 874,142
Int. Cl. C22c *39/00, 37/00*
U.S. Cl. 75—123 8 Claims



Ferrous base alloys containing cobalt, molybdenum and nickel in correlated amounts afford exceptionally high levels of hardness, i.e., up to about Rockwell C (R_c) 70. The presence of other constituents in controlled amounts, notably titanium and/or aluminum, is beneficial.

3,719,475

LOW CARBON FERROUS ALLOY CONTAINING CHROMIUM

Louis Habraken, Cointe, Vincent Leroy, Liege, Marcel Meulemans, Brussels, and Florent Carteels, Aaigem, Belgium, assignors to Centre National de Recherches Metallurgiques, Brussels, and Centre d'Etude de l'Energie Nucleaire, Mol, Belgium

No Drawing. Filed Feb. 13, 1970, Ser. No. 11,344

Claims priority, application Luxembourg, Feb. 14, 1969, 58,006

Int. Cl. C26c *39/14*

U.S. Cl. 75—126 D 1 Claim

The alloy contains Cr, 13 to 25%, Ti 2 to 7%, and optionally one or more of the following metals: Al 0 to 6%, V 2 to 7%, Si 2 to 7%, Mo 0 to 3%, rare earth metals 0 to 0.5% each. The balance is Fe with at most 0.005% C. The properties of the alloy are improved by solution heat-treatment followed by hot-working.

3,719,476

PRECIPITATION-HARDENABLE STAINLESS STEEL

Harry Tanczyn, Baltimore, Md., assignor to Armco Steel Corporation, Middletown, Ohio

Filed Aug. 29, 1969, Ser. No. 854,253

Int. Cl. C22c *39/54*

U.S. Cl. 75—125 5 Claims

Precipitation-hardenable stainless steel combining strength and corrosion-resistance and method of hardening the same. The steel contains the four essential ingredients chromium, cobalt, molybdenum and copper, with remainder iron, the chromium amounting to about 11 to 18 percent, the cobalt about 5 to 14 percent, the molybdenum about 1 to 9 percent, and the copper about 1 to 5 percent. Neither the carbon nor the nitrogen content should exceed about 0.15 percent. Where desired, tungsten and/or vanadium may be partially substituted for molybdenum, this in amounts up to about 6 percent. As annealed, the steel is martensitic. Hardening from the annealed condition is had by heating at descending or cascading precipitation temperatures, i.e., 1,000° to 1,300° F. and then 850° to 1,000° F. In precipitation-hardened condition it is suited to a wide variety of applications in the food-handling, petro-chemical and aircraft industries.

3,719,477

COPPER-LEAD ALLOYS

Charles E. Lundin, Evergreen, and Robert Turkisher, Manitou Springs, both of Colo., assignors to Colorado Springs National Bank, Colorado Springs, Colo.

Continuation-in-part of Ser. No. 706,640, Feb. 19, 1968, Pat. No. 3,556,779. This application July 10, 1970, Ser. No. 53,953The portion of the term of this patent subsequent to Jan. 19, 1988, has been disclaimed.

Int. Cl. C22c *9/48*

U.S. Cl. 75—135 15 Claims

A method of making a copper-lead alloy having a fine and even dispersion of the phases and the alloy and its uses, wherein the method comprises adding an effective amount of a homogeneity promoter to a mixture of molten lead and copper. The promoter comprises elemental carbon and an alkali and/or alkaline earth metal compound capable of reacting to form a gas. The mechanism provided by the promoter is one of innoculation of a fine dispersion of the lead particles in a copper matrix. Examples of the metal compound are sodium carbonate and calcium carbonate. Uses for the alloy include bearings, lubricants and as an additive to petroleum and vegetable based lubricating com-pounds.

3,719,478

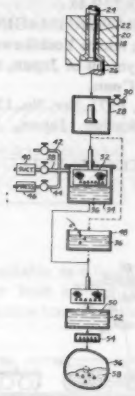
TIRE STUD HAVING POROUS IMPREGNATED BODY

Rolf J. Cantz, Grove City, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Dec. 15, 1969, Ser. No. 885,127

Int. Cl. B60c *11/14*

U.S. Cl. 75—208 R 3 Claims



The specification discloses a tire stud in which the body is formed of sintered metal powder and is about 60 per cent theoretical density. The pores in the stud body are impregnated with a plastic material.

3,719,479

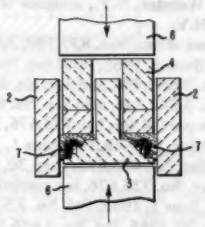
METHOD OF FABRICATING RING SHAPES BY HOT PRESSING

C. Erman Flanagan, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 12, 1971, Ser. No. 114,900

Int. Cl. B22f *3/24*

U.S. Cl. 75—226 6 Claims

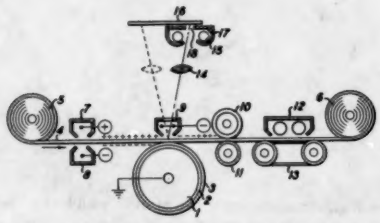


Refractory powders are hot pressed into ring shapes of approximately theoretical density by compressing the powders at a temperature of about 1,000° to 2,000°C. under a pressure of about 200 to 5,000 pounds per square inch in a mold cavity containing a metal ring. The ring is located within the cavity at the highest stress point in the ring shape created during the pressing, and during the hot-pressing the metal ring melt-diffuses into pressed refractory powder. The resulting ring shapes are strong and essentially stress free.

3,719,480
ELECTROPHOTOGRAPHIC COMPOSITIONS AND ELEMENTS
Thomas B. Brantly, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed May 19, 1971, Ser. No. 145,015
Int. Cl. G03g 5/06
U.S. Cl. 96—1 PC 6 Claims

Certain 5-benzylidenerhodanines are useful as photoconductors.

3,719,481
ELECTROSTATOGRAPHIC IMAGING PROCESS
Katsuo Makino, Odawara; Akira Yoshikawa, Meguro-ku, and Toshio Nagashima, Tokyo, all of Japan, assignors to Xerox Corporation, Stamford, Conn.
Filed March 4, 1971, Ser. No. 121,052
Claims priority, application Japan, March 7, 1970, 45/19027
Int. Cl. G03g 13/22
U.S. Cl. 96—1 R 13 Claims



An electrically insulating web is charged on a first side with an electrostatic charge of one polarity and charged on a second side with an electrostatic charge of a second polarity. The first side of the web is brought into contact with a photoconductive layer and the layer is then exposed to a light pattern. The second side of the web is subjected to ions having a polarity of charge opposite to the polarity of charge on the second side. The resulting electrostatic latent image formed on the second side of the web may be developed with electroscopic toner particles.

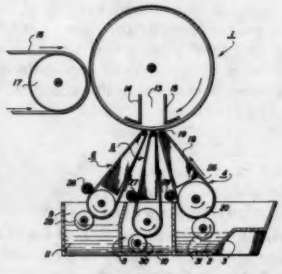
3,719,482
IMAGING SYSTEM
William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Continuation-in-part of Ser. Nos. 837,780, June 30, 1969, and Ser. No. 460,377, June 1, 1965, , and Ser. No. 483,675, Aug. 30, 1965, Pat. No. 3,656,990, and Ser. No. 695,074, Jan. 2, 1968, Pat. No. 3,542,545, said Ser. No. 837,780, is a continuation-in-part of Ser. No. 725,676, May 1, 1968, abandoned, and Ser. No. 460,377, June 1, 1965, Pat. No. 3,520,681, and Ser. No. 483,675, Aug. 30, 1965, Pat. No. 3,656,990, said Ser. No. 725,676, is a continuation-in-part of Ser. No. 460,377, June 1, 1965, Pat. No. 3,520,681, and Ser. No. 483,675, Aug. 30, 1965, Pat. No. 3,656,990, and Ser. No. 403,002, Oct. 12, 1964, abandoned, said Ser. No. 460,377, is a continuation-in-part of Ser. No. 403,002, Oct. 12, 1964, abandoned, said Ser. No. 483,675, is a continuation-in-part of Ser. No. 403,002, Oct. 12, 1964, abandoned, said Ser. No. 695,074, is a continuation-in-part of Ser. No. 520,434, Jan. 13, 1966, abandoned. This application Dec. 31, 1969, Ser. No. 889,457
Int. Cl. G03g 13/22
U.S. Cl. 96—1 R 29 Claims

An imaging system wherein an imaged migration imaging member, this member typically having a substrate, a softenable layer, and migration marking material with some of the marking material migrated toward the substrate or disrupted in an image-wise configuration, is provided and the member is electrically charged to produce an electrostatic latent image on the member.

3,719,483
METHODS OF ORGANIZED THERMOPLASTIC XEROGRAPHY AND PHOTORECEPTOR STRUCTURE THEREFOR
Lloyd F. Bean, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 58,806, July 28, 1970, which is a continuation of Ser. No. 576,648, Sept. 1, 1966, abandoned. This application Sept. 18, 1970, Ser. No. 73,406
Int. Cl. B41m 5/20; G03g 13/22
U.S. Cl. 96—1.1 28 Claims

The present invention is directed to organized thermoplastic xerography techniques and more particularly to photoreceptor structure, methods of forming such photoreceptor structure and methods of using such photoreceptor structure to form viewable frost deformation patterns which are everywhere periodic on the surface of a thermoplastic layer. According to an embodiment of the present invention, photoreceptor structure which includes at least a photoconductive layer and an overcoated thermoplastic layer is provided in a manner such that an interface is formed therebetween. A periodic physical profile is established at the interface between such photoconductive and thermoplastic layers so that upon charging, selective exposure and development the thermoplastic layer is forced to deform in a regular periodic manner which is exposure related.

3,719,484
PHOTOELECTROPHORETIC IMAGING METHOD
Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 6, 1971, Ser. No. 104,333
Int. Cl. G03g 13/22
U.S. Cl. 96—1.2 9 Claims



A photoelectrophoretic ink is subjected to light and electric field a plurality of times during a single scanning pass over the ink by a plurality of web electrodes positioned within the boundaries of a narrow slit scanning light image.

3,719,485
PHOTOCONDUCTIVE ELEMENTS INCLUDING BARRIER LAYER OF CONDUCTIVE OLIGOMERS
Anthony Ferro, Middlebury, Conn., assignor to Uniroyal, Inc., New York, N.Y.
Division of Ser. No. 679,956, Oct. 12, 1967, abandoned. This application May 1, 1970, Ser. No. 43,655
Int. Cl. G03g 5/10, 5/02
U.S. Cl. 96—1.5 5 Claims

Coated articles, for example photoelectrostatic recording members, are made with a coating of an oligomer having the formula $H[CH_2CR'COOM]_a[CH_2CR^2X]_b - SO_3M'$ wherein M and M' are water soluble cations; R' and R^2 are hydrogen or

methyl; X is a —CN or —$CONH_2$ group; $a+b$ is from 10 to 60 and $b/a+b$ is from 0.1 to 0.4 on a base.

3,719,486

PHOTOCONDUCTIVE ELEMENTS CONTAINING ORGANO-METALLIC PHOTOCONDUCTORS

Martin Goldman, and Arthur L. Johnson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 650,664, July 3, 1967, Pat. No. 3,647,429. This application June 17, 1971, Ser. No. 154,163

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.6 **15 Claims**

Photoconductive compositions and elements containing a Group V*a* organo-metallic photoconductive compound.

3,719,487

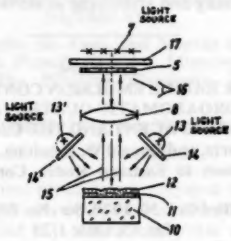
METHOD FOR PRODUCING MICROSTRUCTURES

Hans Jurgen Schutze, Freising, and Klaus Hennings, Ulm (Danube), Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm (Danube), Germany

Continuation of abandoned application Ser. No. 613,347, Feb. 1, 1967. This application Sept. 16, 1970, Ser. No. 72,849

Int. Cl. G03c *5/04*

U.S. Cl. 96—27 R **23 Claims**



A photographic process for producing microstructures, i.e., structures with micron or submicron dimensions, on a substratum in alignment with each other. After a first microstructure has been applied to the substratum, an image of the first microstructure is formed through a lens, and a photomask of a second microstructure is aligned with the first microstructure in the plane of the first microstructure's image. The second microstructure is then imaged through the lens onto a light-sensitive layer on the substratum to produce the second microstructure on the substratum in alignment with the first microstructure.

3,719,488

NOVEL PHOTOGRAPHIC PROCESSES AND PRODUCTS

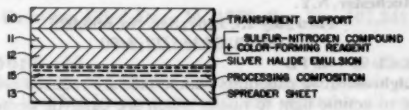
Louis Locatell, Jr., Wellesley Hills; Frank A. Meneghini, Belmont, and Howard G. Rogers, Weston, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

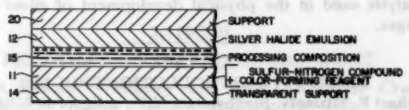
Filed June 21, 1971, Ser. No. 155,000

Int. Cl. G03c *1/54, 7/00, 7/32*

U.S. Cl. 96—29 D **51 Claims**

This invention relates to photographic processes for producing color images by reacting (a) a dye intermediate containing a carbonyl group and selected from an aldehyde and a ketone with (b) a color-forming reagent to form a complete dye wherein an imagewise distribution of at least one of said dye intermediate and said color-forming reagent is formed as a function of developing an exposed silver halide layer followed by reacting the color-forming reagent with the carbonyl group of the dye intermediate to form a corresponding imagewise distribution of a complete dye. In a preferred embodiment, a sulfur-nitrogen compound capable of undergoing cleavage in the presence of silver ions and/or soluble silver





complex made available as a function of development is used to release one or both of the dye-forming reagents in an imagewise distribution corresponding to said silver ions and/or said complex.

3,719,489

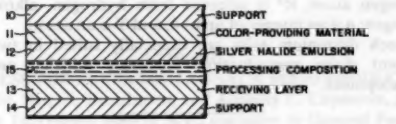
NOVEL PHOTOGRAPHIC PROCESSES AND PRODUCTS

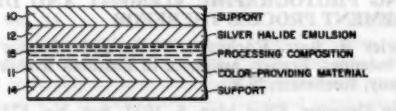
Ronald F. W. Cieciuch, Boston, Roberta R. Luhowy, Watertown, Frank A. Meneghini, Belmont, and Howard G. Rogers, Weston, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed June 21, 1971, Ser. No. 155,123

Int. Cl. G03c *5/54, 1/40*

U.S. Cl. 96—29 D **48 Claims**





This invention relates to photographic processes employing photographically inert compounds which are stable in the photographic processing composition but capable of undergoing cleavage in the presence of an imagewise distribution of silver ions and/or soluble silver complex containing silver ions made available as a function of development to liberate a reagent in an imagewise distribution corresponding to that of said silver ion and/or said complex. In one embodiment, the photographically inert compound is substantially non-diffusible in the photographic processing composition and the reagent released therefrom as a function of development is diffusible in the processing composition. In another embodiment, the diffusible reagent released is a diffusible dye. Compounds particularly useful for liberating a reagent are 1,3-sulphur-nitrogen compounds, e.g., thiazolidines, and their vinyl and phenylene analogs.

3,719,490
PHOTOSENSITIVE ELEMENT CONTAINING A PHOTOREDUCIBLE PALLADIUM COMPOUND AND THE USE THEREOF IN PHYSICAL DEVELOPMENT

Joseph S. Yudelson, Rochester, and Henry J. Gysling, Bronx, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 13, 1967, Ser. No. 653,025
Int. Cl. G03c 5/24, 1/00
U.S. Cl. 96—48 PD 10 Claims

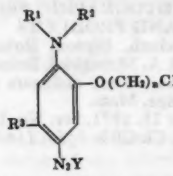
Light-sensitive palladium compounds are reduced on exposure to actinic light to nuclei which are catalytic centers for the deposition of metal from a physical developer. The palladium nuclei are catalysts for deposition of metal from stable physical developers, which developers do not respond to catalysts used in the physical development of silver latent images.

3,719,491
DIAZO-TYPE REPRODUCTION PROCESS

Michael F. Mizianty, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

Division of Ser. No. 737,854, June 18, 1968, Pat. No. 3,597,413. This application March 11, 1971, Ser. No. 123,437
Int. Cl. G03c 5/34, 1/54
U.S. Cl. 96—47 3 Claims

A high-speed diazo-type reproduction material suitable for both one-component and two-component diazo-type reproduction processes comprising a diazonium salt of the formula



wherein R^1 and R^2 are selected from alkyl, aralkyl, and the atoms necessary to form a heterocyclic ring with the amino nitrogen atom; R^3 is selected from hydrogen, alkoxy, and halogen; n is an integer of up to 4; and Y is an anion.

Such diazonium salts are especially suited in two-component diazo reproduction processes utilizing ammonia development.

3,719,492
COMPLEXED p-PHENYLENEDIAMINE CONTAINING PHOTOGRAPHIC ELEMENT AND DEVELOPMENT PROCESS THEREFOR

Charles R. Barr, Rochester, N.Y., and Maurice Pfaff, Vincennes, France, assignors to Eastman Kodak Company, Rochester, N.Y.

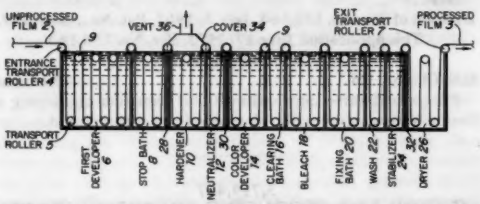
No Drawing. Filed Mar. 5, 1971, Ser. No. 121,590
Int. Cl. G03c 7/00
U.S. Cl. 96—55 24 Claims

Color photographic elements comprising a support coated with at least one hydrophilic colloid layer containing light-sensitive silver halide and a nondiffusible coupler that reacts with oxidized aromatic primary amine color developing agent to form a nondiffusible dye and coated on the same side of the support at least one hydrophilic colloid layer containing a photographically compatible, inactive color developing agent precursor formed by reacting (1) a water-soluble polyvalent metal salt with (2) a water-soluble and diffusible p-phenylenediamine color developing agent or acid salt thereof. The immediate elements have good stability with substantially no change produced by the color developing agent precursor during storage and are advantageously color developed by contacting the photographic element with an aqueous alkaline activator solution which rapidly releases active color developing agent from the precursor.

3,719,493
RAPID COLOR PROCESSING

Donald J. Forst, Webster, N.H., assignor to Itek Corporation, Lexington, Mass.

Continuation-in-part of applications Ser. No. 699,576, Jan. 22, 1968, and Ser. No. 831,226, June 6, 1969, both now abandoned. This application Mar. 24, 1971, Ser. No. 127,689
Int. Cl. G03c 7/00
U.S. Cl. 96—55 41 Claims



This disclosure relates to improved reversal color processing which includes hardening the color film emulsion subsequent to developing the negative image of the film. The improved process permits the use of relatively high temperatures in the steps subsequent to the hardening step thus permitting more rapid film processing while maintaining good color properties. The process steps include first developing the negative image, subsequently hardening the emulsion to be stable to water at 140° F. or above, and then completing processing with steps such as color developing, fixing and stabilizing at elevated temperatures.

3,719,494
SILVER HALIDE EMULSION CONTAINING A DIHYDROAROMATIC QUATERNARY SALT NUCLEATING AGENT AND THE USE THEREOF

Donald W. Kurtz, and Donald W. Heseltine, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,706
Int. Cl. G03c 1/28
U.S. Cl. 96—107 8 Claims

Reactive cyclammonium quaternary salts including a dihydroaromatic ring nucleus, a dihydropyridinium nucleus for example, are useful nucleating agents in direct positive photographic emulsions. The salts include such compounds as a 1,2-dihydro-3-methyl-4-phenylprido[2,1-b]-5-phenylbenzoxazolium salt. They are conveniently prepared by reacting an appropriate cyclammonium precursor compound in an organic solvent medium for a time sufficient to form the dihydroaromatic derivative.

3,719,495
USE OF MEROCYANINE COMPOUNDS IN PHOTOTHERMOSENSITIVE SYSTEMS

Bernard A. Lea, London, England, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 29, 1970, Ser. No. 76,628
Claims priority, application Great Britain, Oct. 3, 1969, 47,850/69
Int. Cl. G03c 1/02
U.S. Cl. 96—114.1 18 Claims

A light-sensitive system including an intimate mixture of a light-insensitive silver salt which yields a visible change upon reduction, and light-sensitive silver halide in an amount sufficient to catalyze reduction of the light-insensitive silver salt upon exposure of the system to light followed by heating in the presence of a reducing agent, the mixture being characterized by including a tri-nuclear merocyanine dye capable of sensitizing the mixture to the longer wavelength portion of the visible spectrum. Also described are novel merocyanine dyes and light-sensitive sheets containing the above-described mixture.

3,719,496

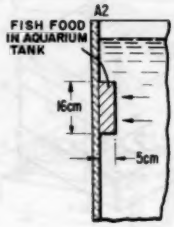
ARTICLES OF WHITE FOOD FOR FEEDING AQUATIC ANIMALS AND METHOD OF MANUFACTURE

David T. Y. Chen, 12 Chang An Rd., E., Section 2, Taipei, and Ten Fuh Shih, 45, Alley 3, Lane 16, Chung Shan Rd., Lu Chou Hsiang, Taipei Hsien, both of China /Taiwan

Filed Sept. 17, 1970, Ser. No. 73,011

Int. Cl. A23k *1/00*

U.S. Cl. 99—2 R 6 Claims



High protein content food for fishes and like aquatic animals is prepared by dehydrating selected worms, quickly freezing a mass of the dehydrated worms, and then freeze drying the mass.

3,719,497

PROCESS FOR PRODUCING A SIMULATED NUTMEAT

Edward Louis Galle, St. Paul, and Marvin Olaf Mikkelson and Joseph Francis Kolosky, Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed June 15, 1970, Ser. No. 46,092

Int. Cl. A23j *3/00;* A23l *1/20*

U.S. Cl. 99—14 9 Claims

Simulated nutmeat products are prepared by forming a homogeneous dispersion composed of minute droplets of fat or oil suspended in a continuous phase composed of a hydrophilic film-former such as an aqueous protein suspension. The dispersion is atomized and dried to provide particles composed of an oleaginous internal phase encapsulated within the protein film. The particles are placed in a press and subjected to sufficient pressure to cause the particles to become bonded together at their points of contact and to exclude most of the air to form a self-supporting structure having the shape of natural nutmeat preferably. These pieces are then unified by exposure to moisture vapor for a period of time sufficient to increase the moisture level by between about 3 and 30 percent (typically about 10 to 15 percent). The pieces are thereafter dried in air to bring the final moisture content to between 1 and 3.5 percent.

3,719,498

SAUSAGE ANALOG PROCESS

Harold T. Leidy, New City, N.Y., Charles M. Kerrigan, Wayne, N.J., and Robert T. Tewey, Dobbs Ferry, and Louis Bartenbach, Thornwood, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 65,716, Aug. 20, 1970. This application Dec. 29, 1970, Ser. No. 102,549

Int. Cl. A23l *1/20*

U.S. Cl. 99—17 4 Claims

A meat analog is formed from a protein gel precursor that has incorporated frozen non-rendered animal fatty tissue prior to a heating operation which causes gelation of the vegetable protein.

3,719,499

MEAT ANALOGS

Atta Mohammed Hai, Palisades Park, and Charles M. Kerrigan, Wayne, N.J., and Harold T. Leidy, New City, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Dec. 29, 1970, Ser. No. 102,548

Int. Cl. A23l *1/20*

U.S. Cl. 99—17 5 Claims

Meat analogs are formed from a vegetable protein concentrate that has incorporated a frozen vegetable oil and/or frozen rendered animal fat prior to a heating operation which causes gelation of the vegetable protein.

3,719,500

PREPARATION OF A BREWERS' WORT

Martin Francis Walmsley and John Valentene Cross, London, Ontario, Canada, assignors to John Labatt Limited, London, Ontario, Canada

Filed July 27, 1970, Ser. No. 58,631

Claims priority, application Great Britain, July 25, 1969, 37,462/69

Int. Cl. C12c *7/00*

U.S. Cl. 99—52 10 Claims

A brewers' wort is prepared from a mash containing less than about 30% by weight malt by heating a raw cereal grain to 65° C. to about 90° C. in the presence of an added discrete α-amylase enzyme whereby the starch in the grain is solubilized and liquefied. Thereafter, the liquefied mass is cooled to 40° C. to 65° C. at which temperature it is subjected to the action of a discrete proteolytic enzyme to produce soluble nitrogen-containing compounds and a discrete β-amylase enzyme or source thereof to produce fermentable sugars.

This invention also includes a process for the manufacture of beer or like non-distilled alcoholic beverages from such brewers' worts.

3,719,501

PROCESS FOR PREPARING A SNACK FOOD PRODUCT

Joseph M. Rispoli, Douglaston, and Anthony C. Capossela, Jr., North Tarrytown, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 7, 1968, Ser. No. 765,679

Int. Cl. A23l *1/10*

U.S. Cl. 99—83 5 Claims

A snack food product comprising popped popcorn in a dough matrix containing flours and starch. The snack food product preferably contains comminuted popcorn in a cooked dough matrix of tapioca flour, corn flour and potato starch, and is deep fat fried. The process for preparing the product is also described.

3,719,502

APPARATUS AND METHOD FOR HYDROKINETICALLY COOKING LEGUMES

Richard Thomas Keely, Grand Rapids, Mich., assignor to J. P. Burroughs & Son, Inc., Saginaw, Mich.

Filed Sept. 18, 1969, Ser. No. 859,075

Int. Cl. A23l *1/20, 3/34*

U.S. Cl. 99—98 14 Claims

The continuous preparation of legumes comprising the forming of an aqueous slurry of legumes, and then cooking the legumes by passing the slurry through a conduit with a predetermined pressure and at a predetermined temperature. Apparatus is provided for regulating the pressure within the conduit and the temperature of the slurry in the conduit. The slurry preferably is formed so that the weight of the legumes does not exceed the weight of the slurry water.

3,719,503

PROCESS OF PREPARING CMC GELS

Thomas J. Podlas, Newark, Del., assignor to Hercules Incorporation, Wilmington, Del.

Filed Nov. 25, 1970, Ser. No. 92,933
Int. Cl. A23l *1/04, 1/06*
U.S. Cl. 99—129 3 Claims

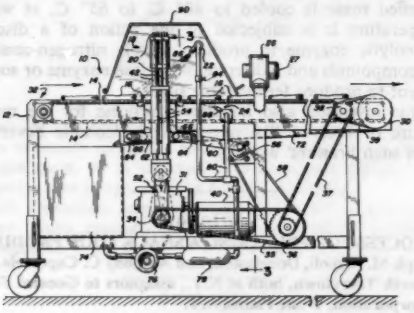
CMC gels are prepared at controlled duration of gelation by mixing together (a) a water solution of certain chelated aluminum salts adjusted to a pH of 4.5 – 9.0, and (b) a water solution of CMC, the pH of the final mixture being about 4.5 – 7.0. Preferred aluminum salts are aluminum sulfate, sodium, potassium or ammonium alum. Citric acid and its sodium, potassium and other water soluble salts are preferred as chelants.

3,719,504

MEAT TENDERIZER

Joseph Greenspan, Evergreen Park, Ill., and Clay E. Hawkins, Springfield, Mo., assignors to Frigidmeats, Inc., Chicago, Ill.

Filed Sept. 24, 1971, Ser. No. 183,531
Int. Cl. A22c *9/00*
U.S. Cl. 99—353 9 Claims



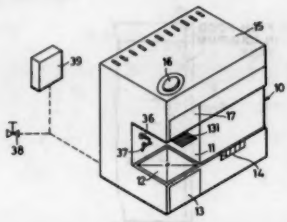
A meat tenderizing device for expeditiously tenderizing meat pieces regardless of the size, shape or surface configuration of the meat. The meat tenderizing device includes a framework carrying an endless conveyor which has a continuous movement so that meat pieces traveling thereon can be processed by the tenderizing device at an optimum rate. Aperturing means positioned on the framework is operable in synchronization with the continuous conveyor movement to accomplish perforation of the meat pieces passing thereunder. A liquid dispensing means positioned on the framework means applies a liquid tenderizing solution to the top and bottom surfaces of the meat pieces immediately after their perforation. The continuous movement of the meat pieces allows the liquid dispensing means to apply the liquid tenderizer in a uniform pattern. In this regard, large orificed nozzles are utilized with the distributing means so that clogging is eliminated. A liquid distributing means is positioned on the framework means to evenly distribute the tenderizing solution on the top surface of the meat pieces and to remove the unabsorbed tenderizing solution therefrom. In this manner, a greater volume and a better quality of meat processing is accomplished.

3,719,505

HOUSEHOLD ELECTRIC MACHINE FOR BREWING AND DISPENSING BEVERAGES

Lamberto Mazza, Pordenone, Italy, assignor to Kantor International S.A., Luxemburg, Luxemburg

Filed June 1, 1971, Ser. No. 148,811
Claims priority, application Italy, June 4, 1970, 25,527/70
Int. Cl. A23l *1/00*
U.S. Cl. 99—275 8 Claims



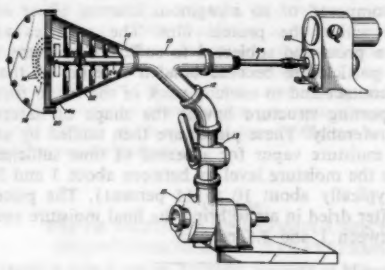
A household machine for the instant preparation of hot or cold drinks is disclosed, of the kind in which a sealed cartridge containing a soluble ingredient is punctured and then fed with a liquid. The machine is characterized in that the cartridges are placed in a drawer-like cartridge holder, with distinct recesses for the cartridges intended for brewing hot drinks and cold drinks respectively. Selection switching means are provided for selecting between cold-liquid feed and hot-liquid feed. Cartridge-puncturing means in the form of nozzles are provided and a cam disc effects the selection of the liquids.

3,719,506

COFFEE EXTRACT SLUSH EXTRUSION APPARATUS

Charles Warren Ehrgott, Rumson, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Original application Feb. 24, 1970, Ser. No. 13,407. Divided and this application June 18, 1971, Ser. No. 154,691
Int. Cl. B01f *7/16*
U.S. Cl. 99—275 5 Claims



Apparatus for mixing and extruding semi-frozen concentrated coffee extract in the form of a partially frozen slush extrudate of ice crystals uniformly distributed throughout an unfrozen matrix of concentrated coffee extract.

3,719,507

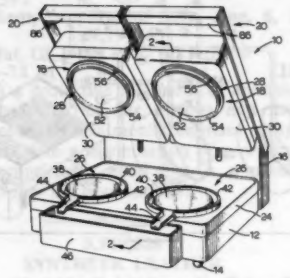
COOKING APPLIANCE

William M. Bardeau, 44 Princess Margaret Blvd., Islington, Ontario, Canada

Filed March 1, 1971, Ser. No. 119,646
Int. Cl. A47j *37/06*
U.S. Cl. 99—375 12 Claims

This invention relates to a cooking appliance in which a cover section having a lower heat-conductive grilling surface

overlies a base section presenting an upper heat-conductive grilling surface, the opposed surfaces being contoured such that they are adapted to mate in overlying relation to define an



upper internal cavity for the reception of an article of food to be cooked draining downwardly peripherally through a narrow passage formation into a lower surrounding channel formation open to the atmosphere.

3,719,508

ELECTROLESS NICKEL SOLUTION

Michael Gulla, Newton, and Oleh B. Dutkewych, Medfield, Mass., assignors to Shipley Company, Inc., Newton, Mass.

No Drawing. Continuation-in-part of application Ser. No. 65,301, Aug. 19, 1970, which is a division of application Ser. No. 785,350, Dec. 19, 1968, both now abandoned. This application Nov. 16, 1971, Ser. No. 199,306

Int. Cl. C23c *3/02*

U.S. Cl. 106—1 **10 Claims**

The invention relates to electroless nickel solutions characterized by the addition of a small but effective amount of a source of iodate ions for increased bath stability. It is known in the art that solutions for electroless nickel plating are unstable and tend to decompose with use. It is also known that decomposition can be retarded and the useful life of a plating solution increased by the addition of various additives, frequently catalytic poisons, in very small concentrations. In accordance with the present invention, it has been found that the stability of an electroless nickel plating solution can be substantially increased by the addition of a source of cuprous ions.

3,719,509

METHOD OF STABILIZING POLYMERIC ORGANIC COMPOSITIONS WITH 3',5' - DIBROMO - 2'-HYDROXYACETOPHENONE

Stanley J. Buckman and John D. Pera, Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,815

Int. Cl. C09d *5/14, 5/16;* C09k *3/28*

U.S. Cl. 106—15 FP **18 Claims**

The preparation of 3',5'-dibromo-2'-hydroxyacetophenone and its use as an ultraviolet light absorber and as a fire retardant for polymeric and organic coating compositions are described.

3,719,510

PREPARATION OF EXPANDED SILICATE-BASED AGGREGATES

Ralph E. Temple, Chardon, and William T. Gooding, Jr., Mentor, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Sept. 29, 1971, Ser. No. 184,943

Int. Cl. C04b *31/02*

U.S. Cl. 106—40 **1 Claim**

A process is provided for the preparation of an expanded insoluble aggregate from a mixture of aqueous and anhydrous alkali metal silicates, having weight ratios of 1:3.0–7.0, with primary and secondary insolubilizers. The anhydrous silicate is added to obtain a silicate solids content within the range of 80–40 percent. After mixing and curing, the composition is ground to a particulate form and subsequently expanded at temperatures in excess of 800° F. The primary insolubilizer, e.g., sodium silicofluoride, serves to reduce the hygroscopicity of the ground particulate material prior to expansion, while the secondary insolubilizer, e.g., calcium carbonate, reacts at expansion temperatures to provide an insoluble lightweight aggregate.

3,719,511

NON-HARDENABLE, HIGH-DENSITY FILL COMPOSITION AND PROCESS FOR MAKING SAME

Marion Wallace Bevard, Route 1, Box 478, Clinton, Md.; Samuel Street Bevard, Jr., 11524 Old Fort Road, Washington, D.C., and Frederick Groom, III, 9029 Falls Chapel Way, Potomac, Md.

Filed Oct. 26, 1970, Ser. No. 84,147

Int. Cl. C04b *7/02*

U.S. Cl. 106—90 **4 Claims**

An improved non-hardenable, high-density composition especially useful as a backfill material for high-voltage cable installation along with a method for making and using the composition is disclosed. The composition is characterized as an admixture of particulate materials, such as sand, gravel, and crushed stone aggregate, a filler such as portland cement, with or without pulverized limestone, clay, etc. and a lubricant. A quantity of water sufficient to give the admixture good workability can be added in a manner which prevents the cement from hardening. The improved composition is useful as ship ballast in addition to its use in construction as a backfill material for pipes, cables, tunnel liners or the like.

3,719,512

BRICK COMPOSITION

Joseph U. Danielis, 8622 Basswood, Apartment 5, Pierrefonds, Quebec, Canada

Filed July 27, 1970, Ser. No. 58,711

Int. Cl. C04b *9/02*

U.S. Cl. 106—106 **9 Claims**

Indoor brick, tile or siding, light-weight, fire-resistant, light-fast, non-curling and easy to install. The product is made of a composition of magnesium oxychloride binder, a main filler of particulate non-metallic material in the nature of finely divided vegetable or inert mineral material and a pigment filler in the nature of metallic oxides. The magnesium oxychloride is a reaction product of magnesium chloride and magnesite in a water medium, the magnesium chloride prior to the reaction having been present (on a dry weight basis) to the magnesite of from about 70 percent to about 100 percent. The main filler is present in an amount of from about 150 percent to about 250 percent (on a dry volume basis) to the magnesite. The pigment filler is present in an amount of from about 17 percent to about 80 percent to the magnesite calculated as substantially dry weight basis. The product is made by preparing a solution of magnesium chloride of from 15° to 25° Baume, adding to the solution the pigment filler, adding magnesite, adding the main filler, mixing the resulting composition to form a paste, pouring the paste into a mould in a layer, if desired

dividing the layer into sections, and allowing the resulting product to harden.

3,719,513

SPRAYABLE GYPSUM PLASTER COMPOSITION

Ralph J. Bragg, Arlington, Mass., and Raymond E. Rothfelder, La Canada, Calif., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed March 10, 1971, Ser. No. 122,703
Int. Cl. C04b *11/00*
U.S. Cl. 106—114 7 Claims

Fire-retardant coatings for structural metal members are obtained by spraying onto the metal settable plaster compositions which are air-containing pumpable aqueous slurries of compositions consisting essentially of, on a dry weight basis, from 52 to 62 percent calcined gypsum, from 2.5 to 18 percent high wet bulking cellulosic fiber, sufficient foaming agent to achieve good workability and satisfactory pumping characteristics, and enough lightweight aggregate to complete the formula.

3,719,514

STARCH BINDER COMPOSITION

Kelley G. Taylor, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation of Ser. No. 685,328, Nov. 24, 1967. This application June 29, 1970, Ser. No. 56,093
Int. Cl. C09d *3/20*
U.S. Cl. 106—210 3 Claims

An insolubilizable mineral coating composition useful in the manufacture of paper wherein the binder or adhesive portion of the coating composition is an anionic starch in combination with a polyalkylenimine. The polyalkylenimine is generally present in an amount of less than 10% by weight of the anionic starch and the anionic starch is preferably a starch material containing carboxyl groups.

3,719,515

FIRE FIGHTING METHOD EMPLOYING SOLUTIONS OF PVA AND ALKALI METAL BORATE

Edward R. Degginger, Convent Station, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 59,778, July 23, 1970, Pat. No. 3,676,169. This application Aug. 2, 1971, Ser. No. 168,428
Int. Cl. A01n *3/00*; C09d *5/18*
U.S. Cl. 117—3 9 Claims

An aqueous solution of 0.1 to 10 percent by weight of polyvinyl alcohol and an aqueous solution of 0.1 to 10 percent by weight of an alkali metal borate, when combined, form a dilatant fluid having excellent properties as a fire retardant and fire suppressant.

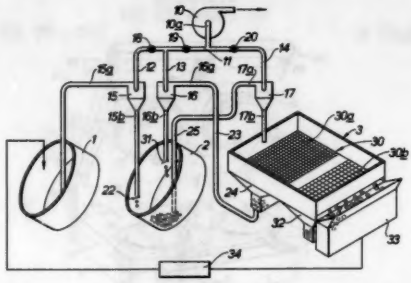
3,719,516

TWO STAGE COATING PROCESS FOR NUCLEAR FUEL PARTICLES

Derek William James Sturge, Dorchester, and Geoffrey William Meaden, West Lulworth, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Mar. 27, 1970, Ser. No. 23,182
Claims priority, application Great Britain, Mar. 27, 1969, 16,245/69
Int. Cl. G21c *3/06*
U.S. Cl. 117—16 4 Claims

To produce a batch of fission product retaining nuclear fuel particles, with an outer overcoating of powdered graphite, such that all the product particles are within a narrow size range, the overcoating process is split into two stages through which the particles pass in succession. A grading operation follows the second stage and those product particles which are undersized are recycled to the second stage, those which are correctly sized are passed to store and those which are oversized are rendered to the uncoated condition to be recycled to the first stage. The



whole process lends itself to the production of uniformly sized overcoated nuclear fuel particles which are more suited for preparing fuel elements with a uniform distribution of fission product retaining fuel in the filler material than are non-uniformly overcoated fuel particles.

3,719,517

DECORATIVE FINISH

James E. Gladstone, 37 Western Way, Whitley Bay, Northumberland; James E. Wilcox, 3 Woodburn Close, Winlaton Co., Durham, and JOhn Hawthorn, Dunnegan Hartside, Birtley Co., Durham, all of England

Filed July 22, 1970, Ser. No. 57,368
Claims priority, application Great Britain, Sept. 17, 1969, 45,937/69
Int. Cl. B44d *5/06*
U.S. Cl. 117—37 R 14 Claims

A decorative finish is applied to substrate material such as leather by a process which comprises forming on the substrate, a coating comprising an aqueous resin/pigment dispersion (a) and a liquid (b) which is substantially immiscible with dispersion (a) under the conditions of the forming and which is not an aqueous component. Preferred resin materials are the polymers and copolymers of acrylic acid, methacrylic acid, and itaconic acids and polymers and copolymers of esters and amides of the same acids.

3,719,518

PROCESS OF FORMING A CARBIDE LAYER OF VANADIUM, NIOBIUM OR TANTALUM UPON A STEEL SURFACE

Noboru Komatsu; Tohru Arai, and Masayoshi Mizutani, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed Oct. 29, 1970, Ser. No. 85,043
Claims priority, application Japan, Nov. 1, 1969, 44/87805
Int. Cl. C23c *9/10*; C23f *7/00*, *17/00*
U.S. Cl. 117—49 21 Claims

A process for the surface treatment of an iron or iron alloy stock comprising heating a mixture of boric acid or borate. A V-a group element of the periodic table consisting of vanadium, niobium and tantalum, or a substance containing the same, and carbon or a carbon containing substance to its fusing state in a bath vessel, and immersing the stock in the molten bath of said mixture, thereby forming a carbide layer of said element on the stock thus treated. The present invention can be performed without adding carbon to a mixture in the case when either said stock or said vessel includes carbon.

3,719,519

PROCESS OF FORMING PROTECTIVE COATINGS ON METALLIC SURFACES BY SPRAYING A COMBINATION OF POWDERS OF A METAL ALLOY, CHROMIUM AND A CERAMIC OXIDE

Giancarlo Perugini, 11 Via Giacomo Leopardi, Merano, Italy

Continuation-in-part of abandoned application Ser. No. 570,283, Aug. 4, 1966. This application Oct. 23, 1970, Ser. No. 83,592

Claims priority, application Italy, Aug. 6, 1965, 17,797/65

Int. Cl. B44d *1/16*; C23c *7/00*

U.S. Cl. 117—71 M 18 Claims

Described is a protective treatment as antioxidant barrier and as heat barrier for ferrous and non-ferrous metallic surfaces. The treatment comprises spray depositing in a molten state a combination of powders of three components comprising a metal alloy A, a metal B, and a metal oxide C onto the base surface.

3,719,520

SYNTHETIC LEATHER

Yasua Fujimoto, Machida; Koichi Nagaoka, Tokyo; Keizo Tatsukawa, Machida, and Yoichi Koiwa, Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 761,853, Sept. 23, 1968, abandoned. This application Nov. 13, 1970, Ser. No. 89,466

Claims priority, application Japan, Oct. 20, 1967, 43/67192; June 4, 1968, 44/37769

Int. Cl. D06n *3/04, 3/12*

U.S. Cl. 117—76 T 6 Claims

Synthetic leather-like coating composition containing a major amount of polyglutamic acid-γ-ester and a minor amount of an acidic amino acid derivative. The amino acid derivative is alkyl or aralkyl or acyl esters such as, for example amino maleic acid, aspartic acid, glutamic acid, α-aminosuberic, α-aminosebacic acid, β-methylaspartic acid, β-hydroxyaspartic acid, β-alkoxyaspartic acid, β-hydroxygulatmic acid, β-alkoxyglutamic acid, 2-pyrrolidone-5-carboxylic acid and the like, and the alkyl or aralkyl or acyl esters of N,N-dialkyl compounds of said acidic amino acids. The composition is coated on or impregnated into a cloth substrate.

3,719,521

POLYESTER AND GRADED ACRYLIC RUBBER-URETHANE-ACRYLATE PAINT AND PAINTING PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,392

Int. Cl. B44d *1/50*

U.S. Cl. 117—93.31 10 Claims

A radiation-curable paint binder dispersion comprises vinyl monomers, an alpha-beta olefinically unsaturated polyester resin having molecular weight in excess of about 1,000, and the addition product of a hydroxy-functional, acrylic graded-rubber particle, a diisocyanate and a hydroxyalkyl acrylate. The dispersion is applied to substrates as a paint film and cured thereon by exposure to ionizing radiation, e.g. an electron beam.

3,719,522

VINYL RESIN AND ACRYLIC RUBBER-URETHANE-ACRYLATE PAINT AND PAINTING PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,496

Int. Cl. C08g *41/04*

U.S. Cl. 117—93.31 15 Claims

A radiation-curable paint binder dispersion comprises vinyl monomers, an alpha-beta olefinically unsaturated vinyl resin having molecular weight in excess of about 1,000 and, an addition product of a hydroxy-functional acrylic rubber particle, a diisocyanate and a hydroxyalkyl acrylate. The dispersion is applied to substrates and cured thereon by exposure to ionizing radiation, e.g., an electron beam.

3,719,523

HYDROXY-VINYL COPOLYMER AND GRADED-RUBBER PAINT AND PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,541

Int. Cl. C08f *15/00, 19/00*

U.S. Cl. 117—93.31 17 Claims

A radiation-curable paint which on a pigment and particulate filler-free basis consists essentially of vinyl monomers and a unique, alpha-beta olefinically unsaturated, rubber-comprising resin formed by reacting a monohydroxy copolymer containing carboxy functionality with a carboxy (acyl chloride)-functional, graded-rubber particle and reacting the resultant polymeric product with an epoxyacrylate monomer. The dispersion is applied to substrates as a paint film and cured thereon by exposure to ionizing radiation, e.g. an electron beam.

3,719,524

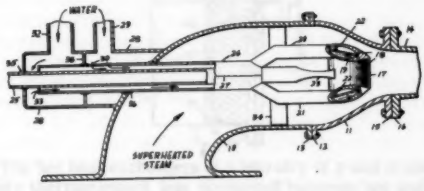
VARIABLE FLOW STEAM CIRCULATOR

Charles C. Ripley and Gerald L. O'Neill, San Jose, Calif., assignors to General Electric Company

Original application Apr. 10, 1968, Ser. No. 720,320. Divided and this application May 13, 1970, Ser. No. 48,642

Int. Cl. F04f *5/46, 5/48*; G21c *17/28*

U.S. Cl. 417—180 2 Claims



An improved thermopresser capable of part load operation. In a steam thermopresser in which water droplets are injected into flowing superheated steam, a system is provided by which water flow can be decreased as steam flow decreases, while maintaining an optimum thermopresser throat configuration at any flow rate. Such a system has particular utility in steam cooled nuclear reactors.

3,719,525

MAGNETIC RECORD MEMBERS HAVING A PROTECTIVE RECORDING SURFACE AND METHOD OF MAKING

Pravin K. Patel, Los Angeles, and Joo H. Liu, Monterey Park, Calif., assignors to Control Data Corporation, Minneapolis, Minn.

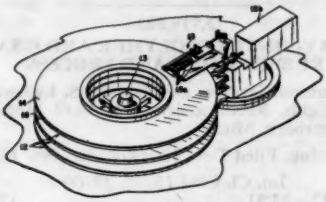
Filed Jan. 9, 1969, Ser. No. 790,129

Int. Cl. H01f *10/06*

U.S. Cl. 117—237 2 Claims

A record disc having a protected thin-film magnetic record surface is disclosed wherein the magnetic record medium comprises a thin-film of cobalt-phosphorous and a protective overlayer including in combination thin-film

oxides formed on the surface of the record medium and firmly bonded thereto by a process including heating in an air-flow oxidizing atmosphere and in a temperature range from 220° C. to 280° C. for a period of time sufficient to form said thin-film of oxides on the surface of the record medium, and a thin-film lubricant of silicone oil which is made integral with the oxides of the overlayer for permanent retention thereby.

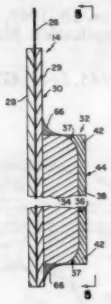


3,719,526

RECHARGEABLE METAL HALIDE BATTERY

Ralph Zito, Jr., Westford, Mass., assignor to The Zito Company, Inc., Derry, N.H.

Filed Feb. 3, 1971, Ser. No. 112,254
Int. Cl. H01m *35/00*
U.S. Cl. 136—6 **15 Claims**



Electrode structures for a rechargeable metal halide battery include: a cathodic electrode comprising a halogen-inert electroconductive layer and bonded to one of the major surfaces thereof, a halogen-entrapment structure comprising a halogen-adsorbent layer and a surface layer comprising porous, electrically non-conductive halogen-inert, electrolyte-inert, and halogen non-adsorbent particles, having an average largest dimension less than about 10 mils and a halogen-inert bonding agent bonding the particles together into an integral non-conductive mass which essentially retains the porosity of the particles; and an anodic electrode having a coating of such electrically non-conductive particles on the electroplating surface of the electrode.

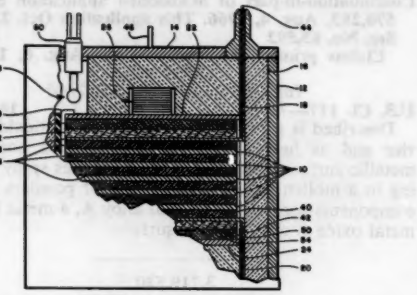
3,719,527

THERMAL BATTERY

Ronald W. Carlsten and Donald A. Nissen, Albuquerque, N. Mex., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 31, 1972, Ser. No. 222,029
Int. Cl. H01m *21/14*
U.S. Cl. 136—83 T **8 Claims**

A thermal battery activatable above a preselected temperature including a casing with a plurality of electrochemical cells therein, each of which includes a halide cathode and a solid electrolyte having substantially greater conductivity after a phase transition, and an anode separated from the cathode by an electrolyte; means are provided in the casing for heating the cells to temperature and initiating the heating means to activate the battery.

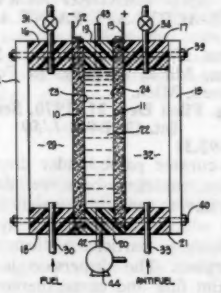


3,719,528

FUEL CELL CONTAINING AN ELECTROLYTE CONSISTING OF AN AQUEOUS SOLUTION OF ARSENIC ACID

Robert K. Grasselli, Cleveland, and James L. Callahan, Bedford, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of application Ser. No. 659,827, May 26, 1967, which is a continuation-in-part of application Ser. No. 144,647, Oct. 12, 1961, both now abandoned. This application Oct. 12, 1970, Ser. No. 80,143
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 R **5 Claims**



Improved ion-containing and conducting medium for electrochemical reaction apparatus comprising phosphoric acid and/or arsenic acid and water.

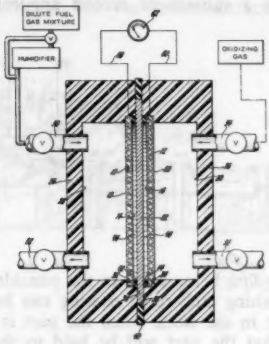
The principles of this invention, for exemplary purposes, will be described in reference to a fuel cell for directly converting chemical energy into electrical energy, it being understood, however, that these principles are applicable to other types of electrochemical reaction apparatus as well.

3,719,529

VOLTAIC CELL AND METHOD USING DILUTE FUEL GASES FOR GENERATE ELECTRICAL POWER

David P. Lake, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 30, 1971, Ser. No. 185,220
Int. Cl. H01m 27/30
U.S. Cl. 136—86 R 6 Claims



A voltaic cell operating on oxidizing gaseous mixtures containing a dilute fuel gas. Functionally similar catalytic gas electrodes are used with a phosphoric acid electrolyte and an ion exchange resin gas diffusion barrier in between. The electrodes are saturated with electrolyte. Means are provided to reduce current variation due to water content variation in the phosphoric acid. The cell can operate on fuel gas mixtures of air containing low concentrations of carbon monoxide.

3,719,530

ELECTRIC BATTERIES AND ALLOYS THEREFOR

John Frederick King, Manchester, and Robert Kenneth Packer, Dorset, Weymouth, both of England, assignors to Magnesium Elektron Limited, Manchester, England

Filed Aug. 6, 1969, Ser. No. 849,284
Claims priority, application Great Britain, Aug. 9, 1968, 38,087/68
Int. Cl. H01m 17/02
U.S. Cl. 136—100 M 12 Claims

This invention relates to electrical batteries having an anode made essentially of a magnesium base alloy containing 1 to 15 percent by weight thallium, 0 to 10 percent aluminum and to foil made of such alloy.

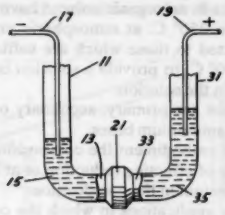
3,719,531

CATIONICALLY-CONDUCTIVE CERAMICS, THEIR PREPARATION AND USE

Matthew A. Dzieciuch, Dearborn Heights, and Neill Weber, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 604,100, Nov. 21, 1966, Pat. No. 3,535,163, which is a continuation-in-part of Ser. No. 500,500, Oct. 22, 1965, abandoned. This application Dec. 22, 1969, Ser. No. 886,806
Int. Cl. H01m 11/00; B01k 3/12
U.S. Cl. 136—153 20 Claims

A crystalline article of manufacture consists essentially of a structural lattice and cations which are mobile in relation to the lattice under influence of an electric field. The structural lattice consists essentially of a major proportion by weight of ions of aluminum and oxygen and a minor proportion by weight of ions of metal having a valence not greater than 2 in crystal lattice combination. The cations which are mobile in relation to the crystal lattice are alkali metal cations, preferably sodium ions.

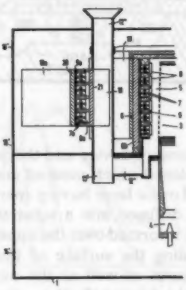


3,719,532

THERMOGENERATOR WITH THERMOELECTRIC ELEMENTS IN EXHAUST DUCTS

Dieter Falkenberg, Erlangen, and Josef Winkler, Nurnberg, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 18, 1970, Ser. No. 47,223
Claims priority, application Germany, June 25, 1969, P 19 32 087.7
Int. Cl. H01v 1/30
U.S. Cl. 136—208 1 Claim



The hot heat exchangers of a plurality of p and n conductivity thermoelement legs positioned between hot and cold heat exchangers are housed in a combustion chamber and are heatable by combustion gases in the chamber. An exhaust duct for the combustion chamber is coupled thereto in a manner whereby the flow direction of the combustion gases in the combustion chamber is reversed and at least part of the combustion gases again flows over the hot heat exchangers.

3,719,533

WITHDRAWN

3,719,534

ANTI-CORROSIVE COATING COMPOSITIONS

Clifford A. Vessey; Geoffrey M. Gibson, and Kenneth U. Holker, all of Harrogate, England, assignors to Associated Chemical Companies Limited

Continuation of Ser. No. 628,310, April 4, 1967, abandoned. This application May 20, 1970, Ser. No. 37,488
Claims priority, application Great Britain, April 5, 1966, 15,082/66; Sept. 29, 1966, 43,631/66; Oct. 25, 1966, 47,875/66; Nov. 24, 1966, 52,631/66
Int. Cl. C23f 7/26
U.S. Cl. 148—6.2 6 Claims

The invention relates to processes for coating metal surfaces and to corrosion resistant coating compositions for use

in the processes. The compositions of the invention are solutions of a chromic acid salt of one or more organic bases having at least one straight or branched chain containing at least six carbon atoms in an organic solvent having a boiling point not greater than 250° C. at atmospheric pressure. The salts used are restricted to those which are sufficiently soluble in the solvent at 20° C. to provide a solution containing at least 0.2% CrO_3 w/v in the solution.

Preferred bases are primary, secondary or tertiary amines and quaternary ammonium bases.

In a preferred embodiment the composition also contains a material capable of effecting reduction of at least a part of the hexavalent chromium in the composition.

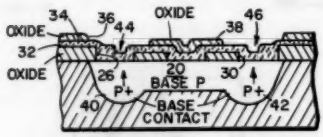
For particular applications in which the composition is applied to metals which have been pretreated, washed and not dried the composition also contains a surfactant and, if necessary, a solubilizing agent for the surfactant.

3,719,535

HYPERFINE GEOMETRY DEVICES AND METHOD FOR THEIR FABRICATION

Demir S. Zoroglu, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 21, 1970, Ser. No. 100,154
Int. Cl. H01l 7/44
U.S. Cl. 148—187 **8 Claims**



A hyperfine geometry device and the method for the making thereof is disclosed which method employs the combination of a patterned oxide layer having apertures designating all the regions to be diffused into a substrate body. A layer of amorphous silicon is formed over the upper surface of the substrate body including the surface of the substrate exposed through the apertures as well as the oxide formed on said upper surface. A third layer of silicon dioxide is formed over the amorphous silicon layer and is patterned to expose selected apertures within the initial or first oxide layer. The patterning of this third layer need not be precise. A diffusion is performed through such exposed amorphous silicon areas into the substrate body. After such diffusion, the amorphous silicon is chemically changed into an oxide for protecting the diffusion aperture from additional diffusions or alternatively, a new passivating layer is formed over such previously diffused areas. In this manner apertures in the first oxide layer are selectively exposed as required in the sequence for manufacturing the desired semiconductor device.

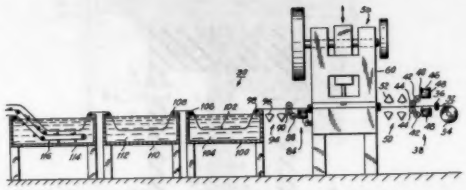
3,719,536

MECHANOCHEMICAL SHEET METAL BLANKING SYSTEM

Lawrence M. Rheingold, Baldwin, Milton Berlin, Forest Hills, Louis De Lallo, Syosset, and Alfred Schierwagen, Richmond Hill, N.Y., assignors to The Alumet Corporation, Hicksville, N.Y.

Filed Feb. 12, 1971, Ser. No. 114,883
Int. Cl. C23f 17/00; H05k 1/00
U.S. Cl. 156—6 **14 Claims**

A system of blanking sheet metal by using a punch and die to partially stamp a part out of sheet metal stock in a fashion such that a considerable portion of the thickness of the part protrudes from the stock but the remainder is retained therein, being separated from the stock by a peripheral shear crack or fault zone. Preferably at least some portions of the part and stock have a coating or layer of an etch resistant material. The opening in the stock from which the part was partially punched out is freshly exposed unprotected metal. Subsequently, the stock and part are etched. The etching fluid attacks the metal at the exposed portion of the opening and in the peripheral shear crack (fault zone) to loosen the hold of the stock on the part. The part finally is released from the stock. Etch resistant material may be applied to the die-facing side of the stock and part after the partial punching operation has been completed and may be a subsequent second application of such



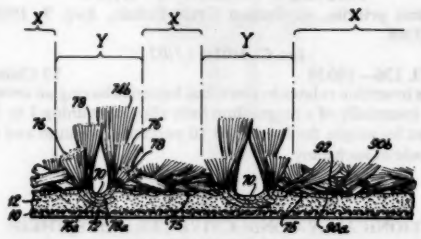
material, the first being prior to the punching step. Such an after-punching etch resist coating can be used to retain the part in the stock when the part is loosened by etching so that the part will be held to the stock until such etch resistant coating is removed. The etching step, in addition to loosening the part from the stock, desirably eliminates the burr which conventionally is present on the punch-facing side of the part so that the part does not have to be deburred in a subsequent step. An etching step may be practiced to deburr a completely stamped out part by protecting all surfaces of the part except in the region adjacent the burr.

3,719,537

PROCESS OF MAKING PILE FABRIC FLOOR COVERING

Roger L. Wilcox, P. O. Box 534, Amagansett, N.Y.

Division of Ser. No. 705,976, Feb. 16, 1968, Pat. No. 3,575,778. This application Nov. 23, 1970, Ser. No. 92,209
Int. Cl. D04h 11/00
U.S. Cl. 156—72 **4 Claims**



As an article, and its method of manufacture, a non-woven fabric useful as a floor covering having a composite tread surface structure presenting pile tuft and flat textile elements.

3,719,538

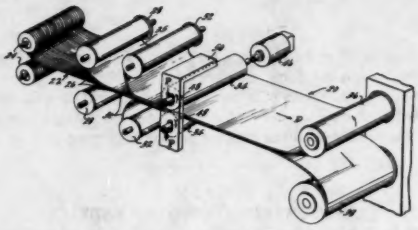
METHOD OF FORMING A COMPOSITE METALLIC PREFORM TAPE

Robert G. Carlson and Carl A. Steinhagen, Cincinnati, Ohio, assignors to General Electric Company

Filed Apr. 12, 1971, Ser. No. 133,207
Int. Cl. B32b 31/06, 31/08, 31/12, 31/20
U.S. Cl. 156—179 **8 Claims**

A composite metallic preform tape for use as laminae in the manufacture of metallic composite articles is made

from a pair of metallic foils and high strength, high modulus filaments aligned between the foils. One form of the method involves first coating either the foil inner surfaces or the filament outer surfaces, or both, with a thin, non-metallic adhesive bonding material which will decompose leaving substantially no residue upon heating at a temperature below that at which the foil and filaments will melt, and preferably below that at which they will bond together. The foil and the aligned filaments are themselves aligned and, in a continuous form of the method, are moved at substantially the same rate and in the same direction so that the coated surface is between



the foil and filaments. At the same time, the foil and filaments are pressed toward one another with a force sufficient to adhesively bond together the foil and filaments and to plastically deform the foil around at least a portion of substantially each filament.

In a preferred form, at least one plastically deformable, strippable outer film is applied for protection and, if desired, for a quality control record. Deformation of the foils around at least a portion of substantially each filament results in an article having a sandwich construction including centrally aligned filaments maintained in spaced apart relationship.

3,719,539

RADIATION CURING OF UNSATURATED POLYESTER COMPOSITIONS

George Edwin Robert Lamb; Dusan Ciril Prevorsek, and Hendrikus Johan Oswald, all of Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 22, 1969, Ser. No. 852,459. The portion of the term of this patent subsequent to July 14, 1987, has been disclaimed.

Int. Cl. B29c *25/00*

U.S. Cl. 156—199 **4 Claims**

A cold-forming method for forming shapes from a laminate which has a thermosetting resinous core and thermoplastic face sheets is disclosed. The thermoplastic face sheets are of sufficient thickness and strength so that the sandwich containing the thermosetting core between the face sheets may be cold formed into shaped articles and such shape as is imparted to it is retained by the thermoplastic face sheets without substantial external constraint on the shape as the thermosetting core is cured by a catalyst system consisting essentially of a peroxide catalyst in conjunction with high energy radiation.

3,719,540

PREPARATION OF TRANSVERSELY FIBRILLATED FILM

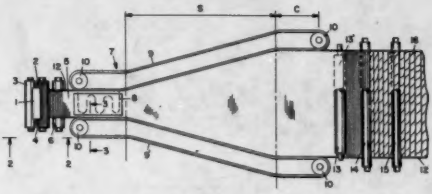
John N. Hall, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 4, 1970, Ser. No. 34,030

Int. Cl. B32b *31/16*

U.S. Cl. 156—267 **7 Claims**

Transversely fibrillated films are prepared by embossing a molten thermoplastic film with transverse striations, transversely stretching the film while leaving an unstretched edge portion which, after stretching is at least 100 percent thicker than the embossed and stretched section. The film is then subjected to fibrillating stress under conditions whereby the thick edges



are not affected. These edges then serve to hold the transverse fibers, resulting from the fibrillation, together in an integral structure for further handling. The fibrillation structure is useful for preparing laminar nonwoven fabrics having the filaments in different layers disposed at an angle to one another.

3,719,541

PROCESS FOR THE PRODUCTION OF PRECOATED METAL

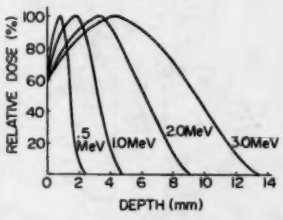
Masao Takahashi; Jiro Mibae; Takamitsu Ino; Ryuhei Takigawa, and Shuji Fujioka, all of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed March 9, 1970, Ser. No. 17,643

Claims priority, application Japan, March 11, 1969, 44/18027

Int. Cl. B01j *1/10*

U.S. Cl. 156—272 **2 Claims**



Process for the production of a precoated metal which comprises laminating a film resin layer on the surface of a metal material through an intermediate layer comprising a radical curable resin and achieving unification of said laminated product by irradiating said laminated product from above with an electron beam having an energy capable of being transmitted to the surface of the metal material.

3,719,542

APPARATUS FOR CONNECTING THE TRAILING END OF ONE METAL STRIP TO THE LEADING END OF A SUCCEEDING METAL STRIP

Gunther Schmitz; Hans Weber, and Christian Vogt, all of Duisburg, Germany, assignors to DEMAG Aktiengesellschaft, Duisburg, Germany

Filed March 31, 1970, Ser. No. 24,244

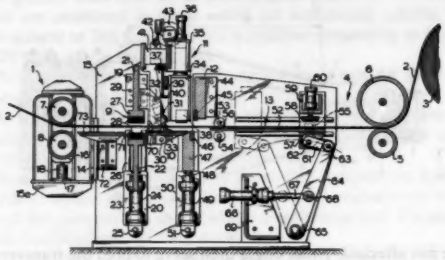
Claims priority, application Germany, May 21, 1969, P 19 25 845.8

Int. Cl. B65h *69/02*

U.S. Cl. 156—502 **16 Claims**

In processing metal strips, the leading end of a succeeding strip is secured to the trailing end of a preceding strip by cutting the unuseable parts of the ends to be connected and applying an adhesive tape completely across the width of at least one of the ends. The ends are aligned in contacting rela-

tionship, preferably one overlaying the other and a pressure member secures them together. If necessary, heat can be applied with the pressure to effect the securement of the ahesive



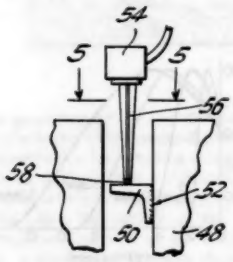
to the metal strips. The adhesive tape is placed across the width of the ends of the metal strips and is cut off before its application to the strip is completed so that it extends for exactly the width of the strip.

3,719,543

ELECTROACOUSTIC MEANS FOR SEPARATION OF GLUED JOINTS

Arthur M. Harris, 135 Southwood Road, Fairfield, Conn.

Filed Sept. 3, 1968, Ser. No. 767,538
Int. Cl. B32b
U.S. Cl. 156—584 **9 Claims**



A method and means for separating glued joints by subjecting at least one of the joined members to ultrasonic vibrations through either direct contact with an electroacoustic transducer, or else indirect contact therewith through a liquid, gaseous or solid medium. The application of the vibrations may be accompanied by a pulling force, exerted as by a suction applied to the joined member.

3,719,544

NOVEL ADHESIVE AND OPTICAL DEVICES LAMINATED THEREWITH

Harold O. Buzzell, Wollaston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 697,019, Jan. 11, 1968, Pat. No. 3,639,311. This application Feb. 1, 1971, Ser. No. 111,725
Int. Cl. G02b *5/30;* **G08f** *29/46;* **C09j** *3/16*
U.S. Cl. 161—1 **2 Claims**

Many of the physical problems encountered in the product of an optically perfect lamination between polymethyl methacrylate and cellulose acetate butyrate may be obviated by utilizing an adhesive comprising approximately 95 percent methyl methacrylate monomer, approximately 4 percent nitrocellulose having a viscosity within the range of 600 to 1,000 seconds^{-1} and about 1 percent of a polymerization initiator for the monomer.

3,719,545

REINFORCED LAMINATED MATERIAL

Harry A. Lawler, Youngstown, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed March 15, 1971, Ser. No. 124,079
Int. Cl. B32b *3/06, 7/08*
U.S. Cl. 161—50 **4 Claims**

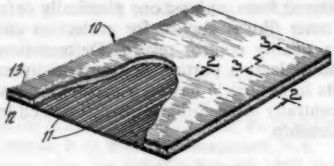
A laminated material made up of densified layers of flexible material such as films or fabrics. The flexible layers are stitched together with reinforcing filaments and then densified under heat and pressure to form a compressed rigid laminate which is suitable as a backing for personnel armor.

3,719,546

LUBRICATED NON-WOVEN FABRIC

David B. Parlin, Thompsonville, Conn., assignor to Bigelow-Sanford, Inc., New York, N.Y.

Division of Ser. No. 713,186, March 14, 1968, Pat. No. 3,576,687. This application Feb. 3, 1971, Ser. No. 112,247
Int. Cl. B32b *5/12, 5/06*
U.S. Cl. 161—55 **10 Claims**



A needled non-woven fabric which comprises a needled web of crimped fibers of a synthetic thermoplastic material such as a polyolefin or a polypropylene. Said web and the fibers thereof being lubricated and including a series of lengthwise extending, spaced warp threads of a material such as cotton which are relatively inextensible in comparison with the needled web of fibers.

The thermoplastic fibers comprising the needled web being bonded or fused into engagement with each other on one or both exterior surfaces of the fabric. The fibers on one such surface also being bonded or fused into engagement with the warp threads. The remaining or interior fibers of the fabric being unfused and mobile or movable relative to each other.

The fibers of the needled fabric being lubricated with a lubricant such as coconut oil to increase the mobility of the unfused fibers and to reduce the noise resulting from tufting of the fabric. The lubricant also prevents overheating of the tufting needles.

3,719,547

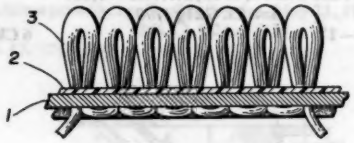
FLAME RETARDANT PILE FABRIC

Donald H. Martin, Gulf Breeze, and Donald A. Holmer, Dennis J. Durant, Roland J. Bryan, Jr., James H. Saunders, and William B. Black, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 9, 1970, Ser. No. 96,403
Int. Cl. D03d *27/00;* **D04h** *11/00*
U.S. Cl. 161—67 **5 Claims**

A flame retardant pile fabric is provided. A fibrous layer composed of combustible filaments or fibers extends from the top surface of a fibrous backing to present a pile sur-

face. A coating of a film forming halogen-containing polymer and a water-insoluble organo-phosphorous compound is applied to and confined essentially to the top surface



of the backing. Where the backing is made in the main of a thermoplastic material, a coating of the halogen-containing polymer without the organo-phosphorous compound renders the fabric sufficiently flame retardant.

3,719,548

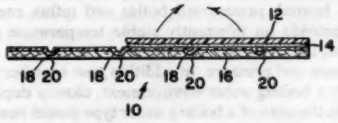
FRACTURABLE ADHESIVE BACKING

Jerry L. Keck, Chicago, and James Robert Rowley, Calumet Park, both of Ill., assignors to Ludlow Corporation, Needham Heights, Mass.

Filed Aug. 6, 1971, Ser. No. 169,653

Int. Cl. B32b *3/30*

U.S. Cl. 161—117 **3 Claims**



A process and apparatus for selectively compressing paper stock of the type which is used as a protective backing sheet for adhesive-coated systems. The process comprises use of a novel compression tool, the precise characteristics of which depend on the paper stock being utilized. The compression tool comprises a blunt, rotatable, circular, working edge which has a radius of at least 0.02, but preferably at least 0.04 inches in diameter and at least one half of the thickness of the paper being weakened. This tool advantageously comprises the compressing edge, being mounted integrally with a bearing surface which makes pressure control easier and limits penetration of the tool. In the preferred embodiments of the invention, the bearing surface is faced with elastomeric material. Disclosure is also made of a novel release sheet and adhesive sheet assembly which is manufactured utilizing the process and apparatus of the invention.

3,719,549

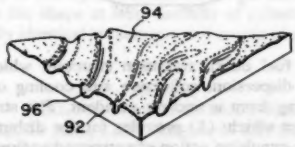
ABRADED SUEDE-LIKE SHEETING AND PROCESS FOR SAME

Emmanuel Mittman, Forest Hills, N.Y., assignor to W. R. Grace & Co., New York, N.Y.

Filed Feb. 5, 1971, Ser. No. 112,899

Int. Cl. B32b *3/00, 31/00*

U.S. Cl. 161—119 **8 Claims**



The invention disclosed is for preparation of a new suede-like plastic sheeting having a desirably configurated surface which provides an improvement in the surface textural characteristic thereof.

3,719,550

CERAMIC ARTICLES AND METHOD OF SEALING CERAMICS

Ronald H. Arendt, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed Apr. 28, 1971, Ser. No. 138,305

Int. Cl. C04b *35/10, 35/50, 39/12*

U.S. Cl. 161—188 **7 Claims**

A method of forming a seal between high-density yttria bodies or between a high-density yttria body and a high-density alumina body is provided. The method involves placing an Al_2O_3-Ga_2O_3-Y_2O_3 mixture between the bodies to be sealed and heating the mixture to a temperature above the melting point of Ga_2O_3 and below the deformation temperature of the bodies such that an Al_2O_3-Ga_2O_3-Y_2O_3 seal forms between the bodies. Ceramic articles having a gas tight seal are made by the method.

3,719,551

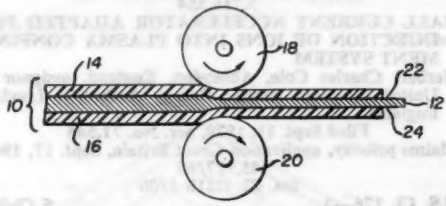
PROCESS FOR PRODUCING A LEAD-PLASTIC LAMINATE AND A LAMINATE PRODUCED BY THE PROCESS

Schrade F. Radtke, New Canaan, Conn., and Jerry Miron, Livingston, Pradip Bhatt, Newark, Bharat C. Shah, Hoboken, and Irving Skeist, Summit, N.J., assignors to International Lead Zinc Research Organization, Inc., New York, N.Y.

Filed Nov. 3, 1970, Ser. No. 86,519

Int. Cl. B21b *1/27;* **B32b** *15/08*

U.S. Cl. 161—213 **18 Claims**



A process for producing a laminate, comprising a lead foil arranged between two sheets of a thermoplastic polymer, and a laminate produced by the process. The process includes the step of rolling the otherwise finished laminate in a two-roll mill to reduce its total thickness. This rolling step, which is preferably carried out in a direction perpendicular to the sheet plastic stress lines, substantially improves the extensibility of the laminate.

3,719,552

BLEACHING OF LIGNOCELLULOSIC MATERIALS WITH OXYGEN IN THE PRESENCE OF A PEROXIDE

Charles Edward Farley, Norwalk, and Martin Grayson, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned applications Ser. No. 34,543, May 4, 1970, and Ser. No. 145,567, May 20, 1971, the latter being also a continuation-in-part of the former. This application June 18, 1971, Ser. No. 154,689

Int. Cl. D21c *9/16*

U.S. Cl. 162—65 **11 Claims**

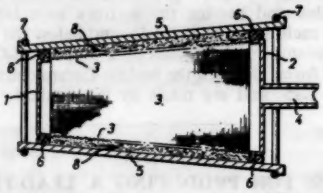
The rate at which sulfate-process pulp is brightened by oxygenated aqueous medium is accelerated by the presence in the medium of a dissolved peroxide when the pH of the medium is in excess of 11.

3,719,553

FORMING FIBROUS ARTICLES WITH A VACUUM SCREEN FORMER WITH PRESSER PLATES FOR SMOOTHING THE OUTSIDE SURFACES

David Trevor Dorril, Kidderminster, and Charles Frank Cooper, Stourport-on-Severn, both of England, assignors to Morganite Research and Development Limited, London, England

Filed Sept. 28, 1970, Ser. No. 76,175
Int. Cl. D21j 7/00
U.S. Cl. 162—227 4 Claims



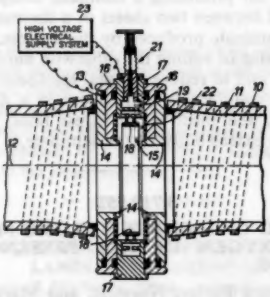
A fibrous article is formed from a slurry by deposition on the walls of a vacuum screen former submerged within the slurry. Presser plates which are resiliently mounted to the screen former press and smooth the outside surfaces of the article under the action of the applied suction once the space between the plates and the screen former has become filled with the fibers. The applied suction can be supplemented or replaced by external pressure applied to the slurry surface.

3,719,554

HALL CURRENT ACCELERATOR ADAPTED FOR INJECTION OF IONS INTO PLASMA CONFINEMENT SYSTEM

Herbert Charles Cole, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Sept. 11, 1970, Ser. No. 71,565
Claims priority, application Great Britain, Sept. 17, 1969, 45,927/69
Int. Cl. G21b 1/00
U.S. Cl. 176—3 6 Claims



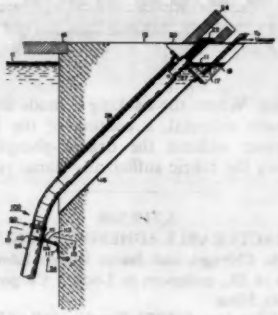
Gas is introduced into an accelerator which operates on the principle of a Hall accelerator. The anode and cathode are concentric annuli with the cathode innermost. The magnetic field is parallel to the axis. The gas is ionised in the accelerator and the ions accelerated radially inwardly towards the axis. The arrangement is especially suitable for injection of ions into a Stellarator type of plasma confinement system since the magnetic field of the confinement system may be used as the magnetic field of the accelerator. This reduces the problem of getting ions from outside to the inside of the magnetic trap.

3,719,555

IRRADIATION TEST FACILITY

Grover L. Davis, Fremont, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Oct. 18, 1968, Ser. No. 771,087
Int. Cl. G21g 1/00
U.S. Cl. 176—17 6 Claims



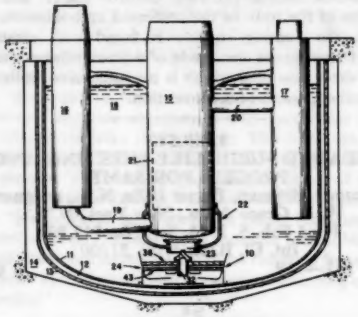
A test facility for use with a nuclear reactor to test instruments, fuel samples, etc., in a reactor environment under varying conditions is disclosed. This facility includes an insulated, gamma ray heated, pressurized boiler and reflux condenser system to provide an inherently stable temperature control system. Thus, the test environment may be varied with respect to temperature and pressure. In addition, test samples may be subjected to a boiling water environment, closely duplicating conditions in the core of a boiling water type power reactor.

3,719,556

NUCLEAR FUEL DEBRIS RETENTION STRUCTURE

Harold J. Snyder, Jr., Danville, and Ralph W. Guenther, San Jose, both of Calif., assignors to The United States of America as represented by the United States Energy Commission

Filed Dec. 2, 1971, Ser. No. 204,267
Int. Cl. G21c 9/00
U.S. Cl. 176—38 10 Claims



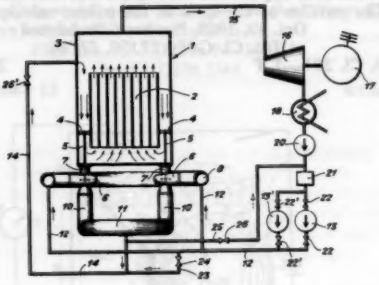
A nuclear fuel debris retention structure which accommodates the dispersion, collection and cooling of the fuel debris resulting from a nuclear accident. The structure includes features which: (1) provides for the disbursement of fuel debris by expulsion action of entrapped sodium, (2) provides all-around cooling for chunks of debris, (3) provides for radial disbursement by the contour and direction of the grid vanes, (4) provides separate cooling to the primary structural support, and (5) allows for the accumulation of finer debris and molten materials due to the shape of the grids.

3,719,557

CIRCULATING SYSTEM FOR A NUCLEAR REACTOR

Dusan Florjancic, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed April 15, 1970, Ser. No. 28,573
Claims priority, application Sweden, May 21, 1969, 6047/69
Int. Cl. G21c *15/24*
U.S. Cl. 176—56 12 Claims



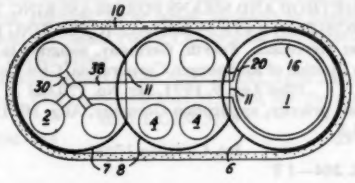
The circulating pump inside the pressure vessel is driven by a turbine outside the pressure vessel which in turn is driven by the flow of liquid working medium. The turbines can be situated above or below the pressure vessel. In either case, the need for seals to externally seal the pump shaft is eliminated and the axial thrust of the pump and turbine can be balanced.

3,719,558

LIQUID-COOLED NUCLEAR REACTOR

Andre Leclou, Fosses, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed March 22, 1968, Ser. No. 715,384
Claims priority, application France, March 28, 1967, 67100504
Int. Cl. G21c *19/28*
U.S. Cl. 176—65 11 Claims



A liquid-cooled nuclear reactor comprising at least one pump for circulating the liquid through the reactor core and through at least one heat exchanger for cooling said liquid, said pump, said heat exchanger and said reactor core are immersed in a same mass of said liquid and disposed respectively in three vertical tanks which contain said liquid mass and which open at the top into a same inert gas atmosphere, said tanks have the shape at least partially of cylinders which are substantially identical in diameter and secant in pairs.

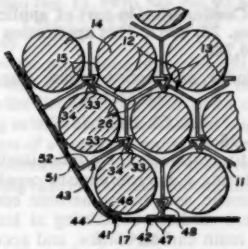
3,719,559

FUEL PIN SPACER STRUCTURE

John C. Bass, La Jolla, Calif., assignor to Gulf General Atomic Incorporated, San Diego, Calif.

Filed Sept. 26, 1969, Ser. No. 861,336
Int. Cl. G21c *3/34*
U.S. Cl. 176—78 6 Claims

A spacer structure is described for maintaining a spaced relation between a plurality of generally parallel fuel pins in a nuclear reactor. The spacer structure is comprised of a plurality of spacer elements constructed from flat plate stock and



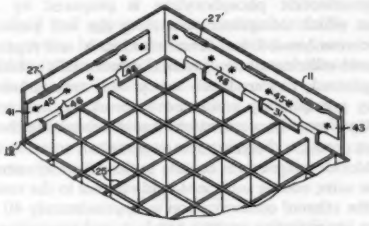
bent in a way so that when the separate pieces are assembled together, they support each fuel pin at a plurality of points and interlock and each other to form a grid-like assembly.

3,719,560

FUEL ASSEMBLY FOR A NUCLEAR REACTOR USING ZIRCONIUM ALLOY CLAD FUEL RODS

Joseph B. Mayers, Greensburg, and Stanley Kmonk, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 29, 1969, Ser. No. 820,107
Int. Cl. G21c *3/34*
U.S. Cl. 176—78 13 Claims



Zirconium alloy structural materials for fuel rods are desirable in nuclear fuel assembly construction due to their low neutron absorption cross section properties. However, zirconium alloys are difficult to utilize due to their inability to be welded with other commonly-used fuel assembly construction materials such as inconel or stainless steel and their thermal expansion coefficient, which is significantly smaller than the inconel or stainless steel alloys commonly-used. The latter characteristic may result in buckling of the fuel assembly in a changing thermal environment. To obviate these difficulties in utilizing fuel rod cladding and/or fuel assembly cans of zirconium alloy with other structural elements such as a spacer grid formed from other materials, provisions are made herein for: (1) a fuel assembly construction having a zirconium alloy enclosure including means for attaching structural elements such as nozzles or grids of other materials thereto, and (2) a stainless steel enclosed fuel assembly having zirconium alloy clad fuel rods, including means for permitting relative movement of the fuel assembly parts due to differences in the thermal expansion rates of elements in the fuel assembly.

3,719,561

PROCESS FOR PRODUCING DIAMINOPIMELIC ACID

Katsunobu Tanaka, Machida-shi, and Kazuo Oshima and Yoh Tokoro, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 663,217, Aug. 25, 1967. This application Aug. 7, 1968, Ser. No. 750,780

Claims priority, application Japan, Aug. 26, 1966, 41/55,832

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 R 14 Claims

A process for producing diaminopimelic acid which comprises culturing a microorganism capable of producing diaminopimelic acid under aerobic conditions in an aqueous nutrient medium containing at least one hydrocarbon as the main carbon source, and accumulating and recovering said diaminopimelic acid from the resultant culture liquor. Hydrocarbons which may be employed include, for example, n-paraffins, perferably having from 11 to 18 carbon atoms, kerosene, light oils, heavy oils, paraffin oils, naphtha, etc. Particular lysine-requiring strains of hydrocarbon-assimilating microorganisms are especially preferred in the process, for example, *Arthrobacter paraffineus* ATCC 21087 and 21088, *Brevibacterium ketoglutamicum* ATCC 21089 and *Corynebacterium hydrocarboclastus* ATCC 21090.

3,719,562

PRODUCTION OF POLYNUCLEOTIDE PHOSPHORYLASE

John W. Rothrock, Watchung, and Stuart R. Michelson, Englishtown, both of N.J., assignors to Merek & Co., Inc., Rahway, N.J.

Filed Oct. 1, 1970, Ser. No. 77,334

Int. Cl. C07g *7/28*

U.S. Cl. 195—66 R 5 Claims

Polynucleotide phosphorylase is prepared by a novel process which comprises separating the cell paste from a *Micrococcus lysodeikticus* fermented broth, and rupturing this cell paste utilizing a homogenizer; substantially saturating the homogenized, ruptured cell slurry with ammonium sulfate, thereby precipitating unwanted by-products, and separating the latter from the supernatant liquid containing the desired enzyme product; dialyzing this supernatant solution against a Tris chloridetmagnesium acetate buffer, thereby removing inorganic salts; adding sufficient cold ethanol to the retentate to bring the ethanol concentration to approximately 40 percent, thereby precipitating enzyme product; and separating said enzyme product, the polynucleotide phosphorylase, from the resulting mixture. The polynucleotide phosphorylase is utilized in the enzymatic polymerization of nucleoside diphosphates, such as cytidine diphosphate and inosine diphosphate, to the corresponding polynucleotides, polyribocytidylic acid and polyriboinosinic acid.

3,719,563

PROCESS FOR PRODUCING 7 - (5-AMINO-5-CARBOXYVALERAMIDO) - 7 - METHOXYCEPHALOSPORAMIC ACID

Robert L. Hamill, New Ross, and Calvin E. Higgens and Marvin M. Hoehn, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of application Ser. No. 847,923, Aug. 6, 1969. This application Aug. 3, 1970, Ser. No. 60,556

Int. Cl. C12d *9/00*

U.S. Cl. 195—80 R 3 Claims

Antibiotic A16884 and its salts, having antibacterial and anthelmintic activity, prepared by fermentation of *Streptomyces lipmanii* NRRL 35984.

3,719,564

METHOD OF DETERMINING A REDUCIBLE GAS CONCENTRATION AND SENSOR THEREFOR

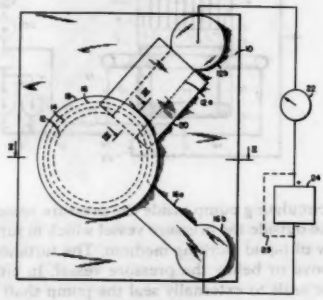
Arnys C. Lilly, Jr., and Calvin O. Tiller, Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation-in-part of applications Ser. No. 878,287, Nov. 20, 1969, and Ser. No. 45,713, June 12, 1970, both now abandoned, Ser. No. 45,804, June 12, 1970, now Patent No. 3,657,016, and Ser. No. 46,158, June 15, 1970. This application May 10, 1971, Ser. No. 141,779

The portion of the term of the patent subsequent to Oct. 17, 1989, has been disclaimed

Int. Cl. G01n *27/00, 27/46*

U.S. Cl. 204—1 T 29 Claims



A reducible gas sensor comprising an electrochemical cell including a cathode, an anode and an electrolyte of a rare earth fluoride. The cell provides ambient reducible gas with ingress to the electrolyte and the conductivity of the electrolyte is accordingly modified, thus providing the cell with a measurable characteristic indicative of ambientconcentration of the gas. A rugged miniature sensor, adapted for use in physically disturbed environments and preferably self-powered, is formed by thin film deposition of the cell elements.

3,719,565

METHOD AND MEANS FOR MEASURING THE DEPOSITION RATE IN METALLIC PLATING BATHS

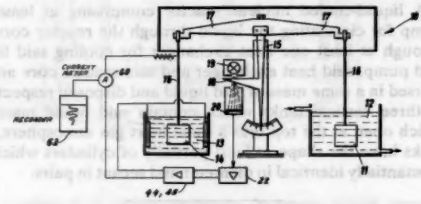
Gunther Herrmann, Fuerth, Germany, assignor to Photocircuits Division of Kollmorgen Corporation, Glen Cove, N.Y.

Filed Aug. 9, 1971, Ser. No. 170,001

Claims priority, application Germany, Aug. 10, 1970, P 20 39 634.3

Int. Cl. G01n *27/00*

U.S. Cl. 204—1 T 9 Claims



A method and arrangement for measuring the instantaneous deposition rate of material on work pieces within metallic plating baths. A test body is immersed in the plating bath and suspended from a weighing scale. A second comparator body is also suspended from the scale and immersed in a second comparator bath. Any increase in weight of the test body due to being plated is registered as an unbalance in the scale. The unbalance is converted into an electrical current which is used

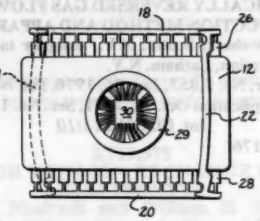
to plate the comparator body so that its weight becomes equal to the test body and the weighing scale is returned to a balanced state. The electrical current is measured and the current measurement is an indication of the instantaneous deposition rate.

3,719,566

PROCESS FOR MAKING INTEGRATED CIRCUIT PACKAGES

Robert E. King, and David F. Thompson, both of Warren, Pa., assignors to Sylvania Electric Products Inc.

Filed Jan. 4, 1971, Ser. No. 103,511
Int. Cl. C23b *5/48*
U.S. Cl. 204—15 **4 Claims**



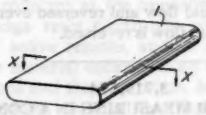
An improvement to a process wherein the electrically conductive parts of an integrated circuit package having a portion of the conductive parts external to a glass-ceramic seal are electroplated with a metal. The improvement comprises fabricating the glass ceramic seal while the electrically conductive portions are in a substantially flat rectangular relationship, then bending two sides of the frame to enable the exposed electrically conductive segments to serve as an electrode, electroplating and removing the two bent sides.

3,719,567

METHOD FOR PRODUCING A CONTACT REED

Kazumasa Ono; Takuya Tanii, both of Tokyo; Gen-ichi Kamoshita, Koganei; Mikio Hirano, Tokyo, and Masafumi Motouchi, Hachioji, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Hitachi, Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 723,433, April 23, 1968, abandoned. This application Dec. 31, 1970, Ser. No. 103,144
Int. Cl. C23b *5/50*
U.S. Cl. 204—34 **25 Claims**



A method for producing a contact reed especially suitable for use in a reed switch to ensure a long life and low electric contact resistance of the switch, comprising electrolytically polishing the reed which is conducted in an electrolyte of H_3PO_4 being kept at a temperature range of from about 50° C to 60° C under the application of an electric current of from about 2 to 5 A/dm² for from about 40 to 50 minutes to obtain a reed which will have a slightly rounded and smooth surface after being plated and then plating the electrolytically polished reed. The contact reed made thereby has a flat surface which is free from partial contact and undesirable pits.

3,719,568

NICKEL ELECTROPLATING COMPOSITION AND PROCESS

Roy W. Klein, St. Clair Shores; Robert A. Tremmel, Woodhaven, and Richard J. Clauss, Allen Park, all of Mich., assignors to Oxy Metal Finishing Corporation, Warren, Mich.

Filed Dec. 11, 1970, Ser. No. 97,346
Int. Cl. C23b *5/08, 5/46*
U.S. Cl. 204—49 **10 Claims**

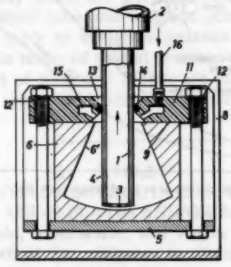
A process for the production of semi-bright electrodeposits of nickel and nickel alloys containing at least 80 percent nickel wherein the electroplating bath used is an aqueous solution containing at least one nickel salt and brightening and/or leveling amounts of a propylene oxide adduct of propargyl alcohol and a coumarin material. In a preferred embodiment, the electroplating bath also contains butyne diol.

3,719,569

METHOD AND APPARATUS FOR COUNTERSINKING CAVITIES IN A WORKPIECE

Peter Gosger, Remscheid-Luttringhausen, Germany, assignor to AEG-Elotherm G.m.b.H., Remscheid Hasten, Germany

Filed Oct. 13, 1970, Ser. No. 80,280
Int. Cl. B23p *1/00*
U.S. Cl. 204—129.55 **3 Claims**



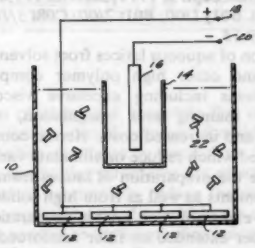
A method and apparatus for electrochemically countersinking a cavity having at least one cross sectional dimension which increases with depth. In one embodiment an electrode tool is infed into a workpiece and moved relative to the cavity in a pendulum motion. In a further embodiment, an arcuate hollow tool is mounted in a tool holder which follows a rotating cam member to infeed the electrode into the workpiece.

3,719,570

ELECTROLYTIC PROCESS

Leslie E. Lancy, Ellwood City, Pa., assignor to Resource Control, Inc., West Haven, Conn.

Filed July 8, 1970, Ser. No. 53,333
Int. Cl. B01k *3/10, 3/00*
U.S. Cl. 204—151 **22 Claims**



A process and cell produces an oxidant or reductant from a solution containing an electrolytically decomposable oxida-

tion or reduction causing precursor compound for use with a waste solution, the oxidant or reductant being obtained by adding an electrolytically decomposable precursor compound to a solution in a vessel having an anode and cathode, one of which is isolated in a porous cup, so that when an electrical current flows between the electrodes the desired oxidizer or reductant will be formed outside the isolated electrode.

3,719,571

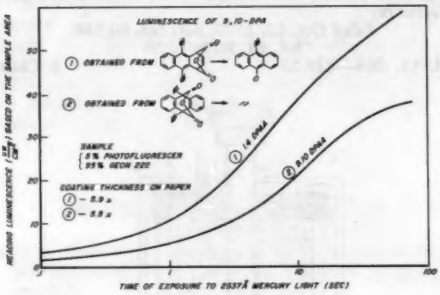
PHOTODECOMPOSITION OF DIHYDRO-AROMATIC AND SIMILAR ANHYDRIDES

Arnold Zweig, Westport, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 764,311, Oct. 1, 1968, abandoned. This application Aug. 8, 1969, Ser. No. 848,577

Int. Cl. B01j *1/10*; **C07c** *15/00*

U.S. Cl. 204—158 R **11 Claims**



A system for storage and retrieval of information comprising the use of non-fluorescent material capable of conversion to a fluorescent material under light of a particular wavelength, or heat, said material being an anhydride of a polycyclic aromatic compound, which can be made to fluoresce, after such conversion, by stimulating light radiation of a longer wavelength. A fluorescent image may be formed and detected by the system.

3,719,572

AQUEOUS LATICES OF HIGH POLYMER COMPOSITIONS AND PROCESSES AND MEANS FOR THE PRODUCTION THEREOF

Oliver W. Burke, Jr., P. O. Box 1260, Fort Lauderdale, Fla.

Division of Ser. No. 767,790, Oct. 15, 1968, Pat. No. 3,622,127, which is a continuation-in-part of Ser. No. 621,997, March 7, 1967, Pat. No. 3,503,917, and a continuation-in-part of Ser. No. 691,823, Dec. 19, 1967, abandoned. This application Sept. 2, 1971, Ser. No. 177,461

Int. Cl. B01j *1/00*; **B01t** *7/00*; **C08f** *3/16*

U.S. Cl. 204—159.15 **1 Claim**

The preparation of aqueous latices from solvent dispersions of elastomers and other high polymer compositions has presented problems including excessive viscosity during processing and foaming and coagulation, which have produced losses and increased costs. Herein combinations of steps are disclosed which reduce or eliminate various of these problems; enable the preparation of latices from high solids, high viscosity cements as well as from high solids cements of low molecular weight polymer; enable preparation of latices of grafted or filler extended or filler reinforced elastomers; enable preparation of latices of low molecular weight polymer which are then modified to materially increase the molecular weight of the polymer and/or the latex particle size; and enable the preparation of improved latices both dilute and of high solids contents, which are useful for example for adhesive and film forming purposes. The process in common with that of related copending applications is characterized, inter alia, by the establishment of a flow of latex through the separating zone and the impingement on said flow of the coalesced latex droplets from the solvent vapor stream in which they are delivered to the separator, and in certain embodiments by the use of particular additive materials. New combinations of steps and of apparatus for performing the same are also disclosed and claimed. The process disclosed is applicable to the production of latices from specified rubbery and non-rubbery polymer compositions, and certain of such latices are new and useful products also claimed herein.

3,719,573

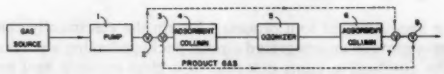
PERIODICALLY REVERSED GAS FLOW OZONE PRODUCTION METHOD AND APPARATUS

Masayuki Kawahata, Scotia, N.Y., assignor to Environment/One Corporation, Latham, N.Y.

Division of Ser. No. 5,853, Jan. 26, 1970, Pat. No. 3,663,418. This application Oct. 15, 1971, Ser. No. 189,704

Int. Cl. C01b *13/10*

U.S. Cl. 204—176 **12 Claims**



A periodically reversed gas flow method and apparatus for ozone production is described. Because moisture reduces the efficiency of most ozonizers, moisture is removed from an oxygen containing fluid before it passes through the ozonizer and the moisture is returned to the oxygen and ozone containing fluid after the ozonizer. At least two moisture adsorbent material columns are used so that the oxygen containing fluid is first passed serially through the two columns with the ozonizer interposed and then periodically reversed to pass serially through the three components in the opposite direction so that at least one column is always in an adsorbent cycle while at least another column is always in a desorber cycle. The pressure of the oxygen containing fluid may be increased immediately upstream of the adsorber column and reduced immediately downstream of the adsorber column, for increased efficiency. The heat of adsorption is transferred from the adsorber column to the desorber column to provide the heat of desorption at the latter column, with the ozonizer serially interposed; the coolant fluid flow is preferably co-current to the oxygen fluid flow and reversed everytime that the oxygen containing fluid flow is reversed.

3,719,574

APPARATUS FOR MEASURING IN A CONTINUOUS MANNER THE OXYGEN IN A MOLTEN METAL

Frederick Denys Richardson, Epsom, England, assignor to Metallurgie Hoboken-Overpelt, Brussels, Belgium and RST International Metals Limited, London, England, part interest to each

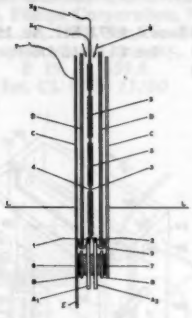
Filed July 6, 1970, Ser. No. 52,373. The portion of the term of this patent subsequent to May 9, 1989, has been disclaimed.

Int. Cl. G01n *27/30*

U.S. Cl. 204—195 S **15 Claims**

Apparatus for the continuous measurement by immersion of oxygen contained in a molten metal which includes solid oxygen electrolyte rod or strip; reference electrode having known oxygen potential; means for measuring the elec-

trochemical potential present between the reference electrode and the metal which is to be tested; a protective tube surrounding the electrolyte; and wherein the electrolyte is held in the end of the tube by means of an oxide cement.

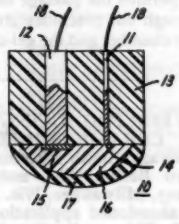


3,719,575

SENSOR WITH ION EXCHANGE RESIN ELECTROLYTE

Leonard W. Niedrach and William H. Stoddard, Jr., Schenectady, N.Y., assignors to General Electric Company

Filed Oct. 15, 1970, Ser. No. 80,903
The portion of the term of the patent subsequent to Nov. 21, 1989, has been disclaimed
Int. Cl. G01n 27/46
U.S. Cl. 204—195 P 3 Claims



A sensor has a rigid electrically insulating matrix, at least a pair of generally parallel, elongated current collectors embedded in the matrix, the current collectors electrically insulated from each other and opposite ends exposed, an electrochemically active region in electrical contact with the exposed end of each current collector at one end of the matrix, an electrical lead in contact with each current collector at the opposite end of the matrix, an ion exchange resin electrolyte contacting both electrochemically active regions, and an outer sheath of diffusion barrier material encapsulating the electrochemically active regions and the electrolyte. Methods of manufacturing such sensors are also described.

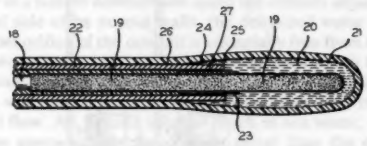
3,719,576

ELECTRODE FOR MEASURING CO_2 TENSION IN BLOOD AND OTHER LIQUID AND GASEOUS ENVIRONMENTS

Robert A. Macur, Milwaukee, Wis., assignor to General Electric Company

Filed Jan. 29, 1971, Ser. No. 110,957
Int. Cl. G01n 27/30
U.S. Cl. 204—195 P 11 Claims

A sensor of the partial pressure of carbon dioxide in blood, other fluid, or gaseous mixture comprises a reference half-cell and a sensing half-cell immersed in a common electrolyte comprising chloride and bicarbonate ions. The sensing half-cell may be palladium-palladium oxide (Pd-PdO) or iridium-iridium oxide (Ir-IrO) and the reference half-cell may be silver-silver halide. The sensing half-cell is a wire coated at its distal end with its own oxide. The reference half-cell may be a silver tube which is coated on its tip with silver halide and slipped over an insulated section of the wire. The distal ends of the tube and wire are dipped into electrolyte which adheres and then into a polymer which forms a carbon dioxide permeable and ion-impermeable membrane or barrier on the whole assembly when the polymer cures. The proximal ends of the silver tube and wire are connected by means of a coaxial cable to a high impedance voltmeter which is calibrated in terms of partial pressure of carbon dioxide in millimeters of mercury. Means are provided for standardizing the sensor and keep it equilibrated during storage.

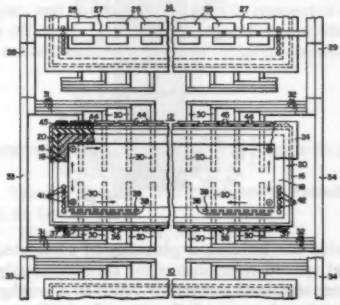


3,719,577

MAGNETIC FIELD CONTROL IN ELECTROLYSIS CELLS USING PLATES AND/OR BARS

Robert F. Robl, Monroeville, and Wayne J. Walker, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed March 18, 1971, Ser. No. 125,584
Int. Cl. C22d 3/02
U.S. Cl. 204—243 M 13 Claims



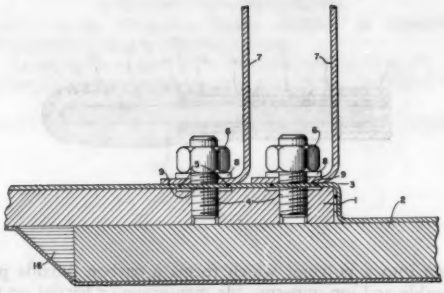
A plurality of elongated, magnetic flux conducting structures magnetically spaced adjacent the sides of a cell for producing molten aluminum by electrolysis. The magnetically spaced, flux conducting structures are effective to shield the cell from and to substantially reduce the strength of a magnetic field component extending within the cell in a direction substantially parallel to the length dimension of the elongated structures without substantially affecting magnetic field components extending in directions other than the magnetic field component extending parallel to the elongated structures.

3,719,578

ELECTROLYSIS CELL WITH ANODE SUPPORT MEANS

Jean Berthoux, Decines; Charles Hostein, Terrasson, and Robert Mugnier, Lyon, all of France, assignors to Progil, Paris, France

Filed Aug. 21, 1970, Ser. No. 65,765
Claims priority, application France, Sept. 22, 1969, 6932270
Int. Cl. B01k 3/10
U.S. Cl. 204—252 6 Claims



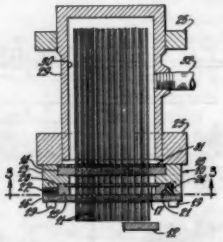
Electrolysis cell which is a series of cathodes and anodes, the anodic arrangement being a support-plate used for current inlet, the plate being coated on the outside with a thin sheet of chemically resistant metal and with a metal anode battery fixed on the support plate by bolts, the anodes being connected by a linking device.

3,719,579

TOOL HOLDER

Donald E. Cross and William E. Blackburn, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation

Continuation of abandoned application Ser. No. 880,552, Nov. 28, 1969. This application May 24, 1971, Ser. No. 146,436
Int. Cl. B01k 3/04; B23r 9/16; C23b 5/70
U.S. Cl. 204—286 13 Claims



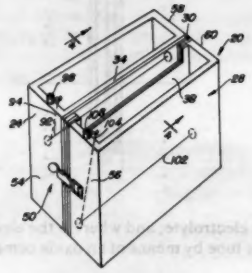
A device for holding a plurality of elongated tools in a parallel spaced relationship for simultaneously machining a predetermined pattern of holes in a workpiece. The tools are passed sequentially through similar patterns of aligned holes in three spaced, parallel plates: a fixed first plate, a linearly movable second plate and a fixed third plate. After the ends of the tools are aligned for simultaneously engaging the workpiece, a set screw is used to move the second plate in a direction parallel to the first and third plates to simultaneously lock the tools in place. A urethane spring is used to bias the second plate against the set screw. The device is particularly suitable for holding a large number of closely spaced hollow electrodes for either electrical discharge machining or electrochemical machining a large number of small holes in a relatively small surface area.

3,719,580

ELECTROPHORETIC APPARATUS

Richard M. Roberts, 1S176 Rochdale Circle, Lombard, Ill., and John Stephen Jones, 2 Lynton Close, Gayton, Heswall, England

Filed June 4, 1971, Ser. No. 150,150
Int. Cl. B01k 5/00
U.S. Cl. 204—299 18 Claims



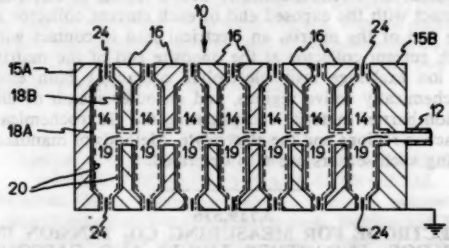
An electrophoretic apparatus in which the gel medium is set while disposed in a vertical attitude, the apparatus including vertically arranged first and second buffer solution containers defining therebetween a zone or cavity for holding a gel-forming solution, the latter solidifying in situ to form an electrophoresis gel medium. The apparatus is further characterized in that it includes a fluid flow barrier which separates the buffer containing chamber from the gel medium cavity, a preferred form of the barrier constituting a semi-permeable membrane which permits the passage of electrically charged particles therethrough but precludes gross transfer of liquid between the buffer chamber and the gel-containing cavity.

3,719,581

APPARATUS FOR PRODUCING WET PROCESS CERAMIC BODIES

Lawrence M. Burrage, South Milwaukee, and Darrel D. McStrack, New Berlin, Wis., assignors to McGraw-Edison Company, Milwaukee, Wis.

Continuation of abandoned application Ser. No. 852,399, Aug. 22, 1969. This application Feb. 25, 1972, Ser. No. 229,298
Int. Cl. B01d 13/02; B01k 5/00
U.S. Cl. 204—299 10 Claims



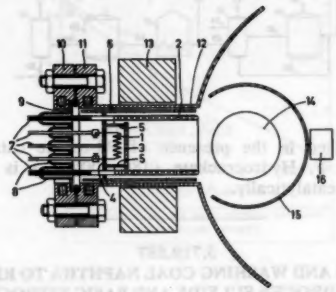
A filter press has a group of chambers for receiving ceramic slip under pressure. Each chamber has a pair of separated electrodes connected to a direct current source. The walls of the chambers have vertical grooves and are coated with an insulating material. A filtering material covers the electrodes.

3,719,582

ION SOURCE FOR SLOW-ION SPUTTERING

Norbert Ernst Fritz Hansen, Roetgen, and Walter Fritz Konrad Littmann, Eildendorf, near Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 15, 1970, Ser. No. 80,972
Claims priority, application Germany, Oct. 21, 1969, P 19 53 659.5
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 3 Claims



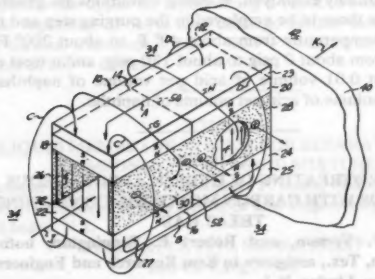
An ion source for a sputtering apparatus comprising an open cylinder in which at one end a filament cathode is arranged, which is screened by two screening plates at right angles to the axis. An axial magnetic field in the anode of a few hundred gauss brings about a low burning voltage of about 30 to 40 v.

3,719,583

APPARATUS FOR THE SEPARATION OF IONS FROM SOLUTION

Daniel D. Ustick, 20024 Goddard Street, Detroit, Mich.

Filed July 6, 1970, Ser. No. 52,615
Int. Cl. B01k *5/00*; C02b *1/82*; B01k *1/00*
U.S. Cl. 204—301 4 Claims



An ionized solution or electrolyte, such as sea water, is caused to flow through a conduit while passing through a magnetic field produced between magnets of opposite polarity disposed in spaced relationship adjacent opposite wall portions of the conduit. Extending between these magnets are two spaced opposite conduit wall portions of electrically non-conducting porous material, such as porous ceramic material, through the pores of which the positive and negative ions in a solution such as sea water can pass. When subjected to the magnetic field extending between the magnets, the positive and negative ions are deflected laterally away from each other in opposite directions toward the porous walls, and are expelled from the conduit through the pores. The opposite but approximately parallel flow of positive and negative ions through this transverse magnetic field generates an electric current density, a very large percentage of which passes through the faces of the conduit's porous walls. The magnitude of the current density flowing out from the pores of the conduit and into the external medium is a measure of the relative concentration of salt water undergoing desalinization by passing constituent ions (in this case from a salt water solution) through the conduit. If there is no measurable current density at a station downstream along the conduit adjacent the external side of its porous walls, the deionized water leaving the outlet orifice of the conduit is essentially free from salts.

To prevent external ions from entering the conduit through its porous walls by diffusion or otherwise, fluid adjacent the porous walls inside and outside the conduit should maintain parallel flow. An ionized solution, such as sea water, flowing past the pores outside the conduit faster than the partially deionized solution inside the conduit will produce a Venturi suction which draws off some of the processed solution of lowered salinity through the pores into the outside flow stream. This forms a thin boundary layer of lowered salinity along the external porous surface of the conduit which assists in preventing the external ion intrusion mentioned above. An internal over-pressure sustained by a dynamic flow pressure along the external porous surface balances any hydrostatic pressure tending to force ions back into the conduit.

To minimize the outward expansion of the external magnetic field generated by the device and its components, the magnets on opposite sides of the conduit are preferably arranged in a series with alternating polarities on each side. Ferromagnetic materials with high magnetic permeability, such as soft silicon steel, are used to provide an easy magnetic flux path for an otherwise open magnetic circuit external to the conduit. Minimizing the external magnetic field is desirable because this field acts to drive ions back into the device and is a source of inefficiency during operation. The magnets are preferably permanent magnets but may alternatively be electromagnets.

A modification of FIG. 3 (FIGS. 5 and 6) provides a barrier between the bodies of flowing electrolyte within the outer conduit and also provides gas escape ports in the upper wall of the outer conduit. The barrier is composed of electrically conducting walls separated from one another by an electrically insulating layer, and conductors electrically connected to these walls carry off current generated in operation and which may be used to actuate electrical devices in external circuits.

3,719,584

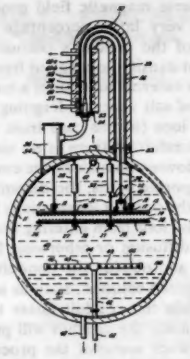
ELECTRIC TREATER WITH GRAVITY-LIQUID HEAT BARRIER

Delber W. Turner, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed July 19, 1971, Ser. No. 163,637
Int. Cl. B01d *13/02*; H01b *7/34*
U.S. Cl. 204—308 18 Claims

A system for electrically treating emulsions which includes a vessel containing inlet and outlets and an electric field formed by electrodes connected to an external transformer. A rigid conduit extends from the vessel to a closed end containing an entrance bushing connected to the transformer and an electrical conductor extends through the conduit between the entrance bushing and the electrodes. The electrical conductor is supported concentrically and in electrical isolation from the conduit. The conduit has an upright portion extending from the vessel, an intermediate bight portion with an 180° return bend forming a thermal dam, and a downwardly extending portion which connects to the closed end. The downwardly extending portion of the conduit carries a heat exchanger for creating a temperature gradient between the entrance bushing and the interior of the vessel. The liquid within the vessel can

be carried at relatively elevated temperatures (e.g., 500°F.) while the entrance bushing remains at relatively low temperatures (e.g., 100°–200° F.). Electrical resolution of emulsions at



elevated temperatures for extended periods can be obtained without temperature-induced destruction of the entrance bushing.

3,719,585

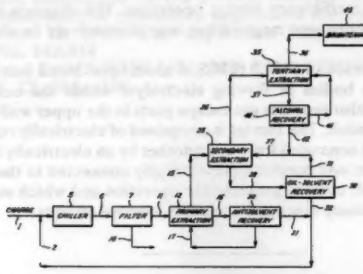
SOLVENT DEWAXING WITH SEPARATION OF SOLVENT BY LIQUID-LIQUID EXTRACTION

James Alan Brasher; Paul Preston Bozeman, both of Groves, and Norman Raymond Odell, Nederland, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,735

Int. Cl. C10g *43/08*

U.S. Cl. 208—33 **10 Claims**



In a dewaxing process wherein a wax-bearing mineral oil is diluted with a solvent mixture comprising an oil-solvent and a wax-antisolvent, the resultant oil-solvent mixture is cooled effecting separation of wax and the solvent mixture is separated from wax free oil by re-extraction. Re-extraction is effected by contacting the oil and solvent mixture with solvents for the wax-antisolvent and for the oil-solvent. The dewaxed oil is subjected to a final brightening.

3,719,586

NAPHTHA CONVERSION PROCESS INCLUDING HYDROCRACKING AND HYDROREFORMING

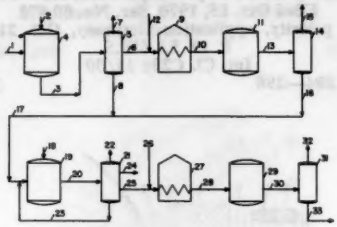
Robert I. Benner, Upper Chichester, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed May 24, 1971, Ser. No. 146,391

Int. Cl. C10g *37/10, 39/00*

U.S. Cl. 208—66 **6 Claims**

Light and heavy naphtha fractions are converted by hydroreforming and hydrocracking to high quality motor fuel in high yield. Light naphtha (180–400° F.) is reformed catalytically and the stabilized reformate blended with heavy naphtha (400 to 500° F.). The mixture is



hydrocracked in the presence of Pd-zeolite catalyst at 650–800° F. Hydrocrackate (180–400° F.) is further reformed catalytically.

3,719,587

PURGING AND WASHING COAL NAPHTHA TO REMOVE DIHYDROGEN SULFIDE AND BASIC NITROGEN

Jean H. Karchmer, Houston, and Robert E. Pennington, Baytown, both of Tex., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 747,798, July 26, 1968, abandoned. This application June 30, 1970, Ser. No. 51,382

Int. Cl. C10g *31/08*

U.S. Cl. 208—208 R **4 Claims**

Coal-derived naphtha boiling within the range from 80° F. to 450° F. has been found to contain sulfur as H_2S and nitrogen as basic nitrogen compounds, particularly after the extract has been hydrocracked. By the present invention, the H_2S is removed by purging the naphtha with an inert gas such as nitrogen, C_1–C_3 hydrocarbons, hydrogen, flue gas, CO_2, and mixtures thereof. Purging conditions may include a temperature from about 40° F. to about 200° F., a pressure from about 0 psig to about 150 psig, and a treat rate from about 50 SCF/B to about 300 SCF/B.

The basic nitrogen compounds are removed by washing the naphtha with water or with a dilute aqueous solution of strong acids. A concentration of 0 to 10 weight percent of acids, such as sulfuric acid, hydrochloric acid, phosphoric acid, and acetic acid, are suitably employed. Washing conditions are generally the same as those to be employed in the purging step and may include a temperature from about 40° F. to about 200° F., a pressure from about 0 psig to about 150 psig, and a treat rate from about 0.01 volume of acid per volume of naphtha to about 1.0 volume of acid per volume of naphtha.

3,719,588

HYDROTREATING OF HYDROCARBONACEOUS LIQUIDS WITH CARBON MONOXIDE-CONTAINING TREAT GAS

Lonnie W. Vernon, and Robert E. Pennington, both of Baytown, Tex., assignors to Esso Research and Engineering Company, Linden, N.J.

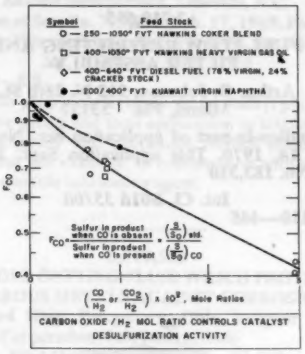
Filed Oct. 26, 1970, Ser. No. 84,089

Int. Cl. C10g *17/00*

U.S. Cl. 208—209 **13 Claims**

Hydrocarbonaceous liquids containing combined nitrogen and sulfur and boiling within the range from about 350° F. to about 1,000° F. can be hydrotreated in the presence of a carbon monoxide-sensitive hydrogenation catalyst with a carbon monoxide-containing treat gas containing at least 2 volume percent CO if from 1 to 20 mols of steam per mol of carbon monoxide are present in the treat gas. The treat gas may also contain from 0 to 96 volume percent of hydrogen. In the preferred mode, a coal-derived liquid boiling within the range

from 350° to 1,000° F. is hydrotreated in the presence of cobalt molybdate catalyst by a treat gas obtained as a synthesis gas and containing about 3 mol percent CO and 10 mol percent H_2O, the hydrotreating conditions including a temperature from about 650° F. to about 800° F., a pressure from about 500 psig to about 2,500 psig, a treat gas-to-liquid ratio from about 3,000 SCF/B to about 12,000 SCF/B and a liquid space velocity from about 0.5 W/Hr/W to about 2.0 W/Hr/W.


Symbol
Feed Stock
O — 250—1050° FVT HAWKINS COKER BLEND
□ — 400—1050° FVT HAWKINS HEAVY VIRGIN GAS OIL
◇ — 400—640° FVT DIESEL FUEL (75% VIRGIN, 24% CRACKED STOCK)
● — 200/400° FVT KUWAIT VIRGIN NAPHTHA
FCO
Sulfur in product when CO is absent
Sulfur in product when CO is present
Mole Ratios
CARBON OXIDE / H2 MOL RATIO CONTROLS CATALYST DESULFURIZATION ACTIVITY

3,719,589
ASPHALT SEPARATION IN DESULFURIZATION WITH AN OXIDATION STEP

Sheldon Herbstman, Spring Valley; Reese A. Peck, Fishkill; Frank E. Guptill, Jr., Fishkill, and Raymond F. Wilson, Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed March 5, 1971, Ser. No. 121,585
Int. Cl. C10g *17/00, 23/00, 27/00*
U.S. Cl. 208—208 R **17 Claims**

Oil containing sulfur and asphalt is subjected to oxidation with organic peroxides or organic peracids at 75° – 200° F. The oxidant residue is removed by heating the oxidized product to about 150° – 450° F, and the heated oil is maintained at 300° – 500° F to separate a lower asphalt layer and to separate the upper oil layer having a reduced sulfur content. The separated oil layer may undergo further desulfurization by thermal treatment at 500° – 900° F or catalytic hydrotreatment at 650° – 900° F.

3,719,590
LIQUID MEMBRANE SYSTEM FOR SEPARATION OF COMPONENTS OF LIQUID MIXTURES

Norman H. Li, Edison, and Robert P. Cahn, Millburn, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

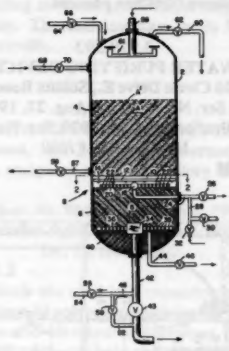
Filed Dec. 17, 1970, Ser. No. 99,267
Int. Cl. C10g *21/00*
U.S. Cl. 208—308 **20 Claims**

This invention relates to a separation process. Specifically, it pertains to the separation of elements of a mixture by selective permeation through a liquid surfactant membrane, which comprises one or more surface active agents, and an additive which selectively increases the solubility of at least one component of the mixture in the liquid membrane, into a solvent phase which may be a solvent for all elements. In a preferred embodiment, hexene-1 is separated from heptane, by use of a liquid surfactant membrane comprising at least 0.2 percent of a Saponin extract as the surface active agent, from 5 percent to 30 percent cuprous ammonium acetate as the solubility increasing additive, and the balance water.

3,719,591
METHOD FOR CONDENSATE FILTRATION AND DEMINERALIZATION

George J. Crits, Havertown, Pa., assignor to Crane Co., Chicago, Ill.

Filed March 5, 1971, Ser. No. 121,493
Int. Cl. B01d *15/02*
U.S. Cl. 210—33 **2 Claims**

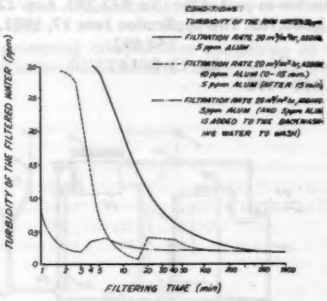


Two beds of ion exchange materials are arranged in series in a single tank for downflow of condensate. The upper bed is a cation exchange resin, an anion exchange resin, or a mixture of anion and cation exchange resins, for the purpose of primary demineralization and for filtration under conditions in which scrubbing is required more frequently than chemical regeneration. The lower bed also consists of ion exchange material, cation or anion exchange resin, or a mixture of such resins, but effects final polishing and requires either relatively infrequent regeneration, or may be discarded. This lower bed is protected from receiving filterable solids by reason of the filtering action of the upper bed. The apparatus involved prevents bed admixture which might otherwise result from removal of the upper bed for scrubbing (and regeneration) and its return for use.

3,719,592
FILTRATION PROCESS FOR CLARIFICATION

Yoshiro Hayashi, and Ayatoshi Obara, both of Tokyo, Japan, assignors to Erbara Infilco Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 2,705, Jan. 14, 1970, abandoned. This application Sept. 17, 1971, Ser. No. 181,442
Claims priority, application Japan, Jan. 17, 1969, 44/3265
Int. Cl. B01d *21/01*
U.S. Cl. 210—53 **2 Claims**



The present invention is a filtration process for performing rapid filtration by adding an inorganic coagulant to a suspen-

sion, consisting of adding a coagulant in the amount less than that with which formation of flocs is recognized to a suspension having the turbidity of raw water, keeping the time, as measured from the point of adding the coagulant to the suspension to the supplying of said suspension to the filtration tank, within a few minutes, treating said suspension at a filtration rate higher than the usual level, and varying the added amount of the coagulant or the filtration rate or both of them until the filtered water becomes stable after the beginning of filtration in the above filtration process.

3,719,593

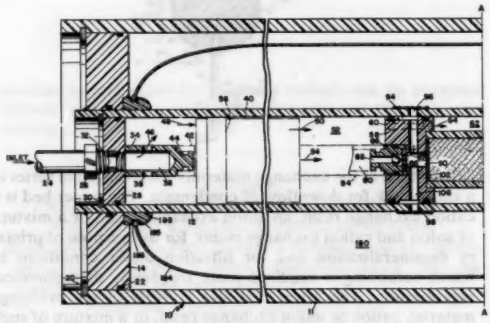
WATER PURIFYING DEVICE

Jaromir Astil, 626 Circle Drive E., Solana Beach, Calif.

Continuation of Ser. No. 852,193, Aug. 22, 1969, abandoned. This application Sept. 25, 1970, Ser. No. 75,699

Int. Cl. B01d *31/00*

U.S. Cl. 210—135 **11 Claims**



A water purifying device employing a reverse osmosis water purifying element that process feed water under line pressure producing purified product water that is accumulated in a compressible container. The container supplies the product water upon operation of a control valve to a product water supply outlet. The control valve directs feed water under line pressure to compress the compressible container and thus force the product water at line pressure to the water supply outlet. This use of the feed water causes an increased feed water flow through the reverse osmosis water purifying element flushing out the element. A bleed drain, drains off the feed water that is employed to compress the compressible container returning the system to the water purifying and storage condition after delivery of the product water.

3,719,594

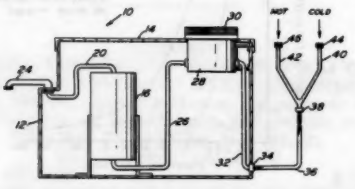
WATER-SOFTENING UNIT

Stuart Borochaner, Levittown, Pa., assignor to National Waterpure Corporation, Fallsington, Pa.

Continuation-in-part of Ser. No. 852,293, Aug. 22, 1969, Pat. No. 3,680,703. This application June 17, 1971, Ser. No. 154,092

Int. Cl. B01d *23/10*

U.S. Cl. 210—190 **3 Claims**



A portable water-softening unit which can be attached to any source of water, the unit comprising a housing having an ion exchange chamber and a regeneration chamber, in the fluid circuit between the source of water and an outlet means extending from the housing. The regeneration chamber is adapted to selectively contain regeneration material for regenerating the ion exchange resin when necessary.

3,719,595

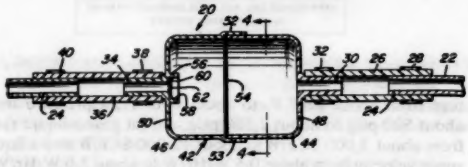
FUEL FLOW RESTRICTING AND FILTER ASSEMBLY

Arthur O. Johnson, 212 N. 26th St., Miami, Fla. 33137

Continuation-in-part of application Ser. No. 37,147, May 14, 1970. This application Sept. 24, 1971, Ser. No. 183,310

Int. Cl. B01d *35/00*

U.S. Cl. 210—445 **2 Claims**



A tubular body for interposing in a fuel flow line to a fuel metering induction assembly of the type adapted to meter measured quantities of fuel for mixing with a combustion supporting gas. The body has a passage formed therethrough and a midportion of the passage defines a flow restrictive zone for reducing fluid pressure pulses. Also, the passage includes a zone of increased cross-sectional area intermediate the inlet end of the passage and the fuel flow restrictive zone for further reducing fluid pressure pulses. The zone of increased cross-sectional area is provided with a transverse filter body through which fuel flowing through the tubular body must pass and thus the filter body is afforded maximum filter area with each unit of cross-sectional area of the filter body subject to a minimum flow of fuel therethrough.

3,719,596

PREPARATION OF ALKALINE-EARTH ALKYLBENZENE SULFONATES

Samuel Shore, Roselle, and Thaddeus M. Muzyczko, Melrose Park, Ill., assignors to The Richardson Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 566,758, July 21, 1966. This application Aug. 5, 1970, Ser. No. 61,418

Int. Cl. C07c *143/24*; C09k *3/00*

U.S. Cl. 252—1 **13 Claims**

Method of forming neutralized homogeneous alkaline-earth alkylbenzene sulfonate double salts with low water content from suspensions of alkaline-earth hydroxides. In the method, an alkylbenzene sulfonic acid is added to form the double salt and neutralize the hydroxide. An alkanolamine is added to adjust the pH to about 7, and distillation is carried out in the presence of an alcohol to remove most of the water. Clear solutions with typically 1 percent or less by weight of water result and are obtained without additional production steps, filtration and cost problems previously associated with similar products.

3,719,597

ACYL-AMINO-PR OPYL-DIALKYLAMMONIUM DIALKYL PHOSPHATES AS TEXTILE FINISHING AGENTS

Arno Wegerhoff, Worth am Main; Franz-Josef Schmitz, Erlenbach, and Carl Macura, Klingenberg, all of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 799,999, Feb. 17, 1969, Pat. No. 3,634,117. This application Dec. 16, 1970, Ser. No. 98,966
Int. Cl. D06m *13/44, 13/26*
U.S. Cl. 252—8.8 7 Claims

Acyl-amino-propyl-dialkylammonium dialkyl phosphates as surface active agents and their application to textile materials, especially polyester and polyamide fibrous materials, as a finishing agent, for example, in combination with an aqueous emulsion of a textile lubricating agent.

3,719,598

AQUEOUS CUTTING FLUID WHICH PROTECTS FERROUS METALS AGAINST CORROSION

John Edward King, Perrysburg, Ohio, assignor to Master Chemical Corporation, Perrysburg, Ohio

Filed Oct. 23, 1970, Ser. No. 83,657
Int. Cl. C10m *1/54, 1/40*
U.S. Cl. 252—33.4 5 Claims

The aqueous cutting fluid consists essentially of a reaction product of boric acid with one to two molecular equivalents of an aliphatic amine having from one to three aliphatic radicals each of which contains from one to four carbon atoms, and having at least one hydroxy group attached to a carbon atom. Improved protection of ferrous metals against corrosion is provided by incorporating in the cutting fluid a petroleum sulfonate together with a non-ionic wetting agent.

3,719,599

SOLID LUBRICANT COMPOSITION AND METHOD OF PREPARATION

Gianbattista Crivellaro, Milano, and Francesco Oldani, Bergamo, both of Italy, assignors to Gruppo Lepetit S.p.A., Milano, Italy

Filed Nov. 4, 1970, Ser. No. 86,946
Claims priority, application Italy, Nov. 25, 1969, 24835 A/69; Nov. 23, 1970, 20972 A/70
Int. Cl. C10m *7/48, 7/02*
U.S. Cl. 252—46.4 4 Claims

A lubricating agent suitable for use in the preparation of water soluble tablets and a method of its preparation are disclosed. The agent comprises in combination a composition of substantially anhydrous sodium sulfate and a dimethylpolysiloxane.

3,719,600

LUBRICANT COMPOSITION CONTAINING POLYCARBOXYLIC ACID

David S. Bosniack, Baytown, Tex., and Harold Shaub, New Providence, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Feb. 8, 1971, Ser. No. 113,741
Int. Cl. C10m *1/26, 1/24*
U.S. Cl. 252—56 S 12 Claims

This invention is directed towards lubricant compositions comprising a lubricating oil and a corrosion inhibiting amount of a polycarboxylic acid containing at least four non-carboxylic carbon atoms and more than two carboxyl groups. These compositions, when based on synthetic ester oils, exhibit reduced tendencies to corrode metals used in construction of gas turbine engines, particularly, lead.

3,719,601

MAGNESIUM SILICATE THICKENED HYDROCARBON INSULATING FLUIDS

Claud L. Jacocks, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Feb. 9, 1971, Ser. No. 114,075
Int. Cl. C04b *43/04*
U.S. Cl. 252—62 5 Claims

Mineral oil viscosified with a finely divided fibrous magnesium silicate including asbestos products, is employed as a fluid insulating medium. Thermal injection wells for oil recovery are insulated therewith.

3,719,602

CAPACITOR ELECTROLYTE

Daniel J. Anderson, and James C. Jimerson, both of Indianapolis, Ind., assignors to P. L. Mallory & Co. Inc., Indianapolis, Ind.

Continuation of Ser. No. 804,986, March 6, 1969, abandoned. This application April 28, 1971, Ser. No. 138,309
Int. Cl. H01g *9/02*
U.S. Cl. 252—62.2 1 Claim

Chromate radicals are used in a capacitor electrolyte comprising a polar organic solvent containing an ionizable salt in order to improve the elevated temperature properties, shelf life and storage life of electrolytic capacitors.

3,719,603

NOVEL LOW BOILING COMPOSITIONS

Richard F. Stahl, Madison, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 30, 1968, Ser. No. 771,998
Int. Cl. C09k *3/02*
U.S. Cl. 252—67 10 Claims

Trifluoromethane (CHF_3) and sulfur hexafluoride (SF_6), in certain proportions, form an azeotropic mixture and equivalent mixtures, which are especially adapted for use as refrigerants in high capacity, low temperature refrigeration systems.

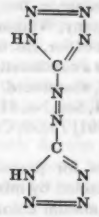
3,719,604

PRESSURIZING-GAS-PRODUCING CHARGES CONTAINING AN AMINOGUANIDINE TETRAZOLE AND AN OXYGEN-LIBERATING OR GAS-EVOLVING ADDITIVE

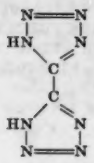
Josef Prior, 521 Troisdorf, and Werner Siegelin, Nuremberg, both of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed Jan. 28, 1971, Ser. No. 110,601
Claims priority, application Germany, Feb. 3, 1970, P 20 04 620.2
Int. Cl. C06d *5/00*
U.S. Cl. 252—186 8 Claims

Novel gas-generating compositions comprising 40 to 100 weight percent aminoguanidine salts of azotetrazole of the formula:



or of ditetrazole of the formula:



Optional other components of such compositions include oxygen-liberating or other gas-evolving substances which may be present in 0 to 60 weight percent of the composition. There are also disclosed pressurizing gas-actuated devices utilizing these compositions.

3,719,605

GERMICIDAL COMPOUND AND SOAP COMPOSITIONS INCORPORATING THE SAME

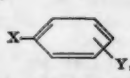
Eric Jungermann, Chicago, and Henry E. Reich, Wilmette, Ill., assignors to Armour and Company, Chicago, Ill.

No Drawing. Original application Nov. 29, 1966, Ser. No. 597,526, now Patent No. 3,649,718. Divided and this application Oct. 28, 1971, Ser. No. 193,561

Int. Cl. C11d *9/50*

U.S. Cl. 252—107 **4 Claims**

Germicidal compounds, particularly useful as additives to soap,, resulting from the reaction of a phosphinic acid halide having from 6 to 12 carbon atoms with a metallic salt of a halogen substituted phenyl compound having the general structure:



wherein X is selected from the group consisting of oxygen, sulfur and nitrogen; Y is a halogen radical selected from the group consisting of chloride, bromide and iodide and z is a positive integer from 1 to 3 inclusive.

3,719,606

MICROEMULSION OF INCREASED VISCOSITY FOR IMPROVED OIL RECOVERY

H R. Froning and Warren S. Askew, Tulsa, Okla., assignors to Pan American Petroleum Corporation, Tulsa, Okla.

Filed Aug. 8, 1969, Ser. No. 848,501

Int. Cl. B01j *13/00*

U.S. Cl. 252—306 **8 Claims**

In the use of microemulsions as solvents in miscible waterflooding, the displacement efficiency of such solvents is improved by increasing their viscosity with a compatible polymer thickener such as polysaccharide B–1459 or poly(glucosylglucans). Modified microemulsions of this type and their use in miscible flooding are described.

3,719,607

STABLE POSITIVELY CHARGED ALUMINA COATED SILICA SOLS AND THEIR PREPARATION BY POST-NEUTRALIZATION

Earl P. Moore, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 831,748, June 9, 1969, abandoned, which is a continuation-in-part of Ser. No. 745,714, July 18, 1968, abandoned. This application Jan. 29, 1971, Ser. No. 111,076

Int. Cl. B01j *13/00*; C01b *33/14*

U.S. Cl. 252—313 S **9 Claims**

An improved process for preparing a stable positively-charged silica sol is obtained by mixing a negatively charged silica sol with basic aluminum chloride, heating the mixture between 45° to 90°C. and then adding to the mixture an alkali metal base, alkaline earth metal base, ammonia or water soluble organic base in the amount of 0.032 to 0.223 equivalents of base per equivalent of aluminum.

3,719,608

OXIDATION RESISTANT GRAPHITE COMPOSITIONS

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 441,905, March 22, 1965, Pat. No. 3,492,197. This application Nov. 12, 1968, Ser. No. 775,097

Int. Cl. H01b *1/06*; C01b *31/00*

U.S. Cl. 252—506 **9 Claims**

This invention relates to a vermicular expanded graphite composition having enhanced oxidation resistance. Such composition comprises an admixture of vermicular graphite with from 0.5 to 10 weight percent, based on the total weight of the mixture, of an oxide of boron or phosphorus or meta borate or phosphate wherein said admixture has been compressed to a density of from 10 to 120 pounds per cubic foot.

3,719,609

SYNTHESIS OF IONICALLY CONDUCTIVE COMPOSITIONS OF MATTER

Leo E. Topol, Canoga Park, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Dec. 8, 1970, Ser. No. 96,227

Int. Cl. H01b *1/02*

U.S. Cl. 252—518 **12 Claims**

A process for the preparation of a solid ionically conductive composition of matter of either the formula:

1. MAg_4I_5 in which M is Rb, NH_4, K, Cs, or a combination of these, Cs being present only as a minor constituent of M; or

2. QAg_nI_{n+1} where *n* has a value from 3 to 39 inclusive and Q is an organic ammonium cation having an ionic volume between 30 and 85 cubic angstroms; comprising reacting approximately stoichiometric quantities, corresponding to the ionically conductive composition formed, of AgI and either MI or QI in a solution of NaI or LiI, the solvent for the NaI or LiI being water or a selected polar organic solvent, preferably acetonitrile or dimethyl formamide.

3,719,610

LOW LOSS ELECTRICAL CONDUCTIVE COATING AND BONDING MATERIALS INCLUDING MAGNETIC PARTICLES FOR MIXING

Winslow W. Prentice, Waterford, Conn., assignor to the United States of America as represented by the Secretary of the Navy

Original application Dec. 16, 1968, Ser. No. 783,976. Divided and this application Aug. 4, 1971, Ser. No. 168,928

Int. Cl. H01b *1/02*

U.S. Cl. 252—513 **1 Claim**

A conductive coating and bonding material for single element electrostrictive transducers and for those formed as a mosaic stack, or non-linear seriatim assembly of electrostrictive segments and including a matrix of known types of room temperature curing epoxy resin having uniformly dispersed therethrough, copper and silver flakes and nickel powder, the nickel powder being present for magnetic mixing. The term electrostrictive is used in the generic sense to encompass ceramic materials and piezoelectric natural or grown crystals.

3,719,611

SYNTHESIS OF IONICALLY CONDUCTIVE COMPOSITIONS OF MATTER USING AMINE SOLVENTS

Leo E. Topol, and Herman Mandel, both of Canoga Park, Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Dec. 8, 1970, Ser. No. 96,226

Int. Cl. H01b *1/02*

U.S. Cl. 252—518 **10 Claims**

A process for the preparation of a solid ionically conductive composition of matter of either the formula:

1. MAg_4I_5 in which M is Rb, K, NH_4, Cs, or combinations thereof, Cs being present only as a minor constituent of M; or

2. QAg_nI_{n+1}, where *n* has a value from 3 to 39 inclusive and Q is an organic ammonium cation having an ionic volume between 30 and 85 cubic angstroms, comprising reacting approximately stoichiometric quantities, corresponding to the ionically conductive compositions formed, of AgI and either MI or QI in a liquid reaction medium that is a water-containing selected amine solvent, and separating the synthesize ionically conductive composition from the reaction medium.

3,719,612

SYNTHESIS OF IONICALLY CONDUCTIVE COMPOSITIONS OF MATTER

William V. Johnston, Camarillo, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Dec. 8, 1970, Ser. No. 96,228

Int. Cl. H01b *1/02*

U.S. Cl. 252—518 **10 Claims**

A process for the preparation of a solid ionically conductive composition of matter of either the formula:

1. MAg_4I_5 in which M is Rb, K, NH_4, Cs, or a combination of these, Cs being present only as a minor constituent of M; or

2. QAg_nI_{n+1}, where n has a value from 3 to 39 inclusive and Q is an organic ammonium cation having an ionic volume between 30 and 85 cubic angstroms; comprising reacting approximately stoichiometric quantities, corresponding to the ionically conductive compositions formed, of AgI and either MI or QI in a liquid reaction medium selected from hydriodic acid, hydrobromic acid, and methyl iodide, and separating the synthesized ionically conductive composition from the reaction medium.

3,719,613

DETERGENT COMPOSITION

Hideo Marumo, 5–4 Nishikubo 3-chome, Musashimo-shi, Tokyo 180, Japan

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,413

Claims priority, application Japan, Aug. 4, 1970, 45/68,145; May 10, 1971, 46/30,390, 46/30,391

Int. Cl. C11d *3/28, 3/30*

U.S. Cl. 252—542 **7 Claims**

A new detergent composition comprising, in combination, a water-insoluble metal salt of amphoteric surface active agent and a substance capable of dispersing and solubilizing this metal salt in water. This composition may be used either independently or by being included in any known detergent. In this latter instance, the detergency, bubble-forming ability and duration of bubbles of the base detergent are greatly improved. In particular, laundry which is cleansed with this composition either directly or jointly with a known detergent is invariably bestowed with an antistatic property, a resistivity to resoiling and a soil-releasability.

ERRATUM

For Class 260—590 see:
Patent No. 3,719,280

3,719,614

PROCESS OF MAKING FOAM RUBBER, AND THE FOAM RUBBER THUS PRODUCED

Sam W. Wright, Calhoun, Ga., assignor to The Firestone Tire and Rubber Co., Akron, Ohio

Continuation-in-part of Ser. No. 42,552, June 1, 1970, abandoned. This application March 19, 1971, Ser. No. 126,253

Int. Cl. C08f *47/08*; **C08c** *17/08*; **C08d** *13/08*

U.S. Cl. 260—2.5 L **10 Claims**

Foam rubber is produced by foaming an aqueous polymer latex containing at least 0.05 percent by weight zinc oxide, based on the polymer, and from 0.2 to 5.0 percent by weight ammonium polyphosphate, based on the polymer; then heating the foam to solidify and dry it. The ammonium polyphosphate can be the sole gellant; or a soluble ammonium salt gellant can be used in addition. Greater "gel tolerance" results in the latter case.

3,719,615

POLYHYDROXY CONDENSATES OF ISOCYANURIC ACID

Michel Buisson, "Les Esperelles," Chemi Henri Belin, and Daniel Durand, "Villa Biancho" Avenue de l'Oliverale, both of 13 Martigues, France

Filed March 15, 1971, Ser. No. 124,594

Claims priority, application France, March 23, 1970, 7010332

Int. Cl. C08g *22/44, 22/06*

U.S. Cl. 260—2.5 AW **14 Claims**

This invention is addressed to novel polyhydroxyl compounds prepared by reaction of isocyanuric acid, formaldehyde, and an alkanol amine and their polyalkylene oxides derivatives, and to polyurethanes prepared from these polyhydroxyl compounds and organic isocyanates.

3,719,616

ANTI-MIGRATORY ADDITIVE FOR EMULSIFIED PHENOLIC RESIN SYSTEMS SAID ADDITIVE BEING A WATER SOLUBLE POLYACRYLATE

Woodrow Hayes Ingram, II, Hampden, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 8,679, Feb. 4, 1970, abandoned. This application May 13, 1971, Ser. No. 142,905

Int. Cl. C08g *37/20, 37/32*

U.S. Cl. 260—7 **8 Claims**

The present invention relates to an anti-migratory (as respects impregnated porous sheet members) phenol-formaldehyde resole resin in water emulsions. The emulsion is rendered anti-migratory (when impregnated into paper through the addition thereto of an anti-migratory agent selected from the group consisting of polyelectrolytes, certain salts of inorganic acids, and combinations thereof. The composition is especially useful in the impregnation of filter paper.

3,719,617

TEXTILE SIZING COMPOSITION CONTAINING HIGHLY WATER SOLUBLE DEXTRIN PHOSPHATE

Ulrich Schobinger, Zug; Cla Christoffel, Waedenswil, and Kurt Berner, Pfaeffikon-SZ, all of Switzerland, assignors to Blattmann & Co., Waedenswil, Switzerland

Division of Ser. No. 826,707, May 21, 1969, Pat. No. 3,642,774. This application June 3, 1971, Ser. No. 149,823

Claims priority, application Switzerland, May 21, 1968, 7533/68

Int. Cl. C08b *25/02*; **C09j** *3/06*

U.S. Cl. 260—17.4 ST **7 Claims**

Compositions for sizing textiles are provided which contain a major proportion of a low molecular, highly water soluble dextrin phosphate and a minor proportion of a high molecular nitrogen containing starch phosphate or a polymer selected from water soluble polyvinyl acetates, polyvinyl alcohols and polyacrylates, or of a mixture of such polymer and a high molecular nitrogen containing starch phosphate. The high molecular starch phosphate typically has a viscosity of about 40,000 to 60,000 cps when in 5 percent solution in water at 25° C. The low molecular dextrin phosphate is a thermally degraded phosphorylated starch having between 0.3 and 3 percent by weight of phosphorus molecularly bound therein and having a light color, a solubility higher than 30 percent in water at 25° C. and a viscosity in the range of about 5 to 500 cps when in 5 percent solution in water at 25° C.

3,719,618

THERMOSETTING, NON-GELLED HYDROXYL FUNCTIONAL COATING COMPOSITIONS

Joseph M. Makhlouf, Mars, Pa., assignor to P.P.G. Industries, Inc., Pittsburgh, Pa.

Filed June 21, 1971, Ser. No. 155,274
Int. Cl. C09d 3/52
U.S. Cl. 260—21 8 Claims

Hydroxyl functional polymers can be produced by employing monomers derived from 12-hydroxystearic acid and glycidyl acrylates or methacrylates and reacting said monomers with other unsaturated monomers, thus providing polymers that form suitable thermosetting compositions when the polymers are co-cured with various crosslinking agents or other resinous compositions.

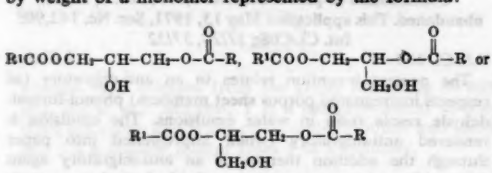
3,719,619

QUICK DRYING COATINGS CONTAINING COPOLYMERS HAVING t-ALIPHATIC HYDROCARBON GROUPS AND t-ALIPHATIC ALKYD RESINS

Nobuyoshi Nagata, Nara-shi, and Ryuzo Mizuguchi, Osaka, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

No Drawing. Filed Sept. 2, 1970, Ser. No. 69,113
Claims priority, application Japan, Sept. 8, 1969, 44/70,548
Int. Cl. C08b 21/08; C08f 21/04; C08g 39/10; C09d 3/64
U.S. Cl. 260—22 CB 26 Claims

A quick drying coating composition comprising a solvent and a resin composition consisting essentially of (A) 100 parts by weight of a copolymer containing 5 to 70% by weight of a monomer represented by the formula:



wherein R stands for a tertiary aliphatic hydrocarbon group having in total 4 to 26 carbon atoms; R^1 stands for an α,β-ethylenically unsaturated hydrocarbon group having 2 to 3 carbon atoms which may have one $COOR^2$ group wherein R^2 is a hydrogen atom or an alkyl group having 1 to 4 carbon atoms and 30 to 95% by weight of at least one unsaturated monomer copolymerizable therewith and (B) 5 to 600 parts by weight of an alkyd resin containing 1 to 70% by weight of a tertiary aliphatic carboxylic acid represented by the formula:

HOOCR

wherein R has the same meaning as defined above. Said coating composition is excellent in properties such as coating-workability, high build, weather-resistance, gloss, chemical resistance and adhesiveness.

3,719,620

NONLINEAR POLYESTER RESIN COMPOSITIONS

Ralph Earl Layman, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Oct. 20, 1971, Ser. No. 191,087
Int. Cl. C09d 3/52, 3/68
U.S. Cl. 260—22 D 10 Claims

Nonlinear polyester resin having enhanced flexibility characteristics comprising the esterification reaction product of (1) a mixture of an α,β ethylenically unsaturated dicarboxylic acid and a phthalic acid, (2) a mixture of a simple polyhydric alcohol and a complex-ether polyhydric alcohol, and (3) a trimer acid composition of an ethylenically unsaturated aliphatic monocarboxylic acid having between 14 and 22 carbon atoms and a method for preparing the same are provided.

3,719,621

PROCESS FOR PREPARING POLYURETHANES IN AN ISOCYANATE-REACTIVE SOLVENT SOLUTION

Herwart C. Vogt, Grosse Ile, and Wayne G. Lajiness, Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation-in-part of application Ser. No. 813,322, Apr. 3, 1969, which is a continuation-in-part of application Ser. No. 629,919, Mar. 30, 1969, both now abandoned. This application May 21, 1971, Ser. No. 145,879
Int. Cl. C08g 22/16, 51/26, 51/34
U.S. Cl. 260—30.4 N 10 Claims

A cosolvent system of a monohydric alcohol and an inert solvent, miscible therewith, is used to prepare a urethane polymer by reacting an isocyanate-terminated prepolymer, dissolved in the inert solvent, with a diamine chain-extending agent, dissolved in the monohydric alcohol solvent. The urethane polymer prepared in this manner forms a homogeneous solution of pronounced lower viscosity in the cosolvents utilized. The urethane polymer is thermoplastic, has excellent film-forming characteristics, and may be used in preparing coatings, films, castings, and like products.

3,719,622

RAPID DRYING ALKYD COATING MODIFIED WITH AMINO AROMATIC CARBOXYLIC ACID

Robert D. Holzinger, Homewood, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed June 28, 1971, Ser. No. 157,696
Int. Cl. C08g 17/16; C09d 3/64
U.S. Cl. 260—22 A 8 Claims

Modified short oil and medium oil length alkyd resins with rapid drying characteristics which yield tack-free films within from about 15 minutes to 110 minutes and which employ relatively small amounts, up to 15% by weight of the resin composition, of an amino benzoic acid, e.g. anthranilic acid or compounds which yield anthranilic acid during cooking of the resin, are provided. Methods of producing the aforementioned modified alkyd resins are also provided.

3,719,623

RUBBERY POLYMERIC MIXTURES COMPRISING A MALEINIZED TYPE OIL

Werner Josef Blank, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed April 1, 1971, Ser. No. 130,527
Int. Cl. C09d 3/28, 3/74, 5/02
U.S. Cl. 260—23 AR 10 Claims

There is provided a composition of matter comprising a rubbery polymeric mixture of an unsaturated glyceride oil ranging from 30 to 60 percent of the over-all resin solids and a copolymer of: (A) a half ester reaction product of an α,β-mono-ethylenically unsaturated dibasic acid, or corresponding an-hydride dienophile, and an alcohol containing from four to 22 carbon atoms, said half ester being present in amount ranging from 10 to 55 percent of the over-all resin solids, and (B) a mono-ethylenically unsaturated compound in an amount ranging from 10 to 50 percent of the over-all resin solids.

3,719,624

VINYL CHLORIDE POLYMERS HAVING IMPROVED THERMAL STABILITY AND METHOD OF MAKING

Syed K. Mowdood, and Charles J. Gebhart, both of Akron, Ohio, assignors to The Goodyear Tire and Rubber Co., Akron, Ohio

Filed May 28, 1971, Ser. No. 148,204
Int. Cl. C08f 45/8
U.S. Cl. 260—23 XA 3 Claims

Vinyl chloride is polymerized in the presence of a bicyclo [3.1.1] hept-2-ene heat stabilization sensitizer (i.e., 6,6-

dimethyl bicyclo [3.1.1] hept-2-ene-2-ethanol) also known as nopol to form a more ecologically acceptable polymer because the polymer can be thermally stabilized without the use of conventional tin and cadmium stabilizers.

3,719,625

HIGH-MELTING WAX COMPOSITIONS

Vernon D. Parker, Lawrence, Kans., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jan. 27, 1971, Ser. No. 110,320
Int. Cl. C08f *45/52, 19/10*
U.S. Cl. 260—28.5 AV 12 Claims

Novel high-melting wax compositions are prepared by heat-curing a mixture of petroleum wax, an olefin-vinyl ester copolymer and an aluminum polyalkoxide. Novel coating methods utilizing the new wax compositions are also disclosed.

3,719,626

CURABLE AQUEOUS MIXTURE OF (1) ADDUCT OF POLYGLYCIDYL ETHER AND ALLYLAMINE AND (2) CARBOXYLIC ACID

Clayton A. May, Orinda, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Oct. 9, 1969, Ser. No. 865,178
Int. Cl. B01k *5/02*; C08g *30/08*
U.S. Cl. 260—29.2 EP 2 Claims

An adduct of a polyepoxide and an ethylenically unsaturated amine is dispersed in water with an organic acid to provide cathodic electrodepositable coating compositions. Allyl amine and diallyl amine are preferred, and R_1—CH=CH—CH_2—NHR is disclosed. The adduct may further be reacted with additional polyepoxide, the product being dispersible and film forming.

3,719,627

THERMOSET ORGANIC COMPOSITIONS CONTAINING CYCLIC TRISULFONES

Girish Girdhar Parekh and Werner Josef Blank, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 1, 1971, Ser. No. 130,448
Int. Cl. C09g *51/24*
U.S. Cl. 260—29.4 UA 6 Claims

A composition comprising (1) from about 40% to about 95%, by weight, of an anionic acrylic polymer containing at least a carboxyl or alcoholic hydroxyl function, (2) from about 4.9% to about 50%, by weight, of an amine-aldehyde cross-linking agent and (3) from about 0.1% to about 10%, by weight, of a cyclic trisulfone is provided. The composition finds utility in coating applications wherein low temperature cure of the said coated resinous composition can be attained with attendant high resistance to organic solvents.

3,719,628

ETHYLENE/VINYL CHLORIDE/ACRYLAMIDE INTERPOLYMER AND STYRENE/BUTADIENE/UNSATURATED ACID TERPOLYMER POLYBLEND

Joseph G. Bergomi, Jr., St. Louis, and Paul R. Graham, Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 20, 1970, Ser. No. 65,712
Int. Cl. C08f *37/18*
U.S. Cl. 260—29.7 W 22 Claims

Composition comprising a polyblend of ethylene/vinyl chloride/acrylamide interpolymer and styrene/butadiene/unsaturated acid terpolymer useful as adhesive binder in inorganic paper-coating compositions.

3,719,629

WATER THINNABLE COATING COMPOSITIONS FROM AMINOETHYLATED INTERPOLYMERS

Patrick H. Martin, Lake Jackson, and Russell T. McFadden, Freeport, both of Tex., assignors to The Dow Chemical Corporation, Midland, Mich.

Filed March 31, 1971, Ser. No. 129,975
Int. Cl. C08f *45/24, 45/34*
U.S. Cl. 260—33.2 EP 7 Claims

Water thinnable coating compositions are prepared by incorporating therein as the pigment binder an acidified aminoethylated copolymer having pendant amino-alkylate groups of the formula

wherein R_1 and R_2 are independently selected from the group consisting of hydrogen and lower alkyl radicals of one to four carbon atoms and the average value of *n* ranges from about 1.0 to 2.5 and wherein the copolymer before aminoethylation contains at least 3 percent by weight pendant —COOH groups.

Water dispersant epoxy resin coating compositions are also disclosed.

3,719,630

SOLVENT-FREE LIQUID ORGANOSILOXANE RESINS

Robert C. Antonen, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 123,472, Mar. 11, 1971, which is a continuation-in-part of application Ser. No. 11,031, Feb. 12, 1970, both now abandoned. This application Sept. 20, 1971, Ser. No. 182,232
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB 15 Claims

Liquid resins consisting essentially of 15–55 mol percent $CH_3SiO_{3/2}$ units, 2–20 mol percent $(C_6H_5)_2SiO$ units, 20–40 mol percent C_6H_5SiO units, 10–40 mol percent of $CH_3(CH_2{=}CH)SiO$ or $CH_2{=}CHSiO_{3/2}$ units, 0–25 mol percent $CH_3(C_6H_5)SiO$ units and 0–25 mol percent $(CH_3)_2SiO$ units are utilized as binders for ceramic formulations.

3,719,631

ETHYLENE OXIDE POLYMER COMPOSITION

Kenichi Hattori, Yuichi Ueda, and Yukio Tanino, Wakayama, Japan, assignors to Kao Soal Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 862,510, Sept. 30, 1969. This application May 28, 1971, Ser. No. 148,210
Claims priority, application Japan, Oct. 3, 1968, 43/72,119
Int. Cl. C08g *51/60*
U.S. Cl. 260—45.8 SN 1 Claim

Stabilized ethylene oxide polymer compositions having an intrinsic viscosity greater than 0.03 and containing 0.05 to 15% by weight of an amino-2-mercaptobenzothiazole, or a benzothiazole or an oxobenzisosulfonazole of Formulas I, II and III, respectively.

3,719,632

ROOM TEMPERATURE CURABLE ORGANOPOLYSILOXANES

Guenther Fritz Lengnick, Adrian, Mich., assignor to Stauffer-Wacker Silicone Corporation, Adrian, Mich.

Filed Dec. 30, 1970, Ser. No. 103,007
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 G 4 Claims

The invention relates to siloxane cross-linking agents and to curable one-component organopolysiloxanes obtained from

the reaction of the siloxane cross-linking agents and a hydroxyl-terminated organopolysiloxane to form a composition which is curable in ambient moisture.

3,719,633

METHOD FOR PREPARING POLYCARBORANYLENESILOXANE POLYMERS

Karl O. Knollmuller, Hamden, and John F. Sieckhaus, Milford, Conn., assignors to Olin Corporation

No Drawing. Filed Oct. 18, 1971, Ser. No. 190,282
Int. Cl. C08f 11/04
U.S. Cl. 260—46.5 E 10 Claims

A method for the preparation of high molecular weight linear polycarboranylenesiloxane polymers by the condensation of selected hydroxy terminated, silicon containing carboranes in the presence of a catalyst system consisting of a combination of a selected acid salt of tetramethylguanidine and the acid of said salt.

3,719,634

ROOM TEMPERATURE VULCANIZABLE SILICONE ELASTOMERS CONTAINING METAL HYDROCARBONOXIDES

William H. Clark, Mount Pleasant, Thomas W. Greenlee, Midland, and Louis H. Toporcer, Ingersol Township, Midland County, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed June 18, 1971, Ser. No. 154,647
Int. Cl. C08f 11/04
U.S. Cl. 260—46.5 G 10 Claims

Room temperature vulcanizable silicone elastomer compositions prepared by mixing a hydroxyl endblocked polydiorganosiloxane, an alkoxy silicon compound, a metal salt of a carboxylic acid and a metal hydrocarbonoxide, such as $Fe(OR)_3$, $V(OR')_3$, $Co(OR')_2$, $MoO_2(OR')_2$, $Zn(OR')_2$, $Ce(OR')_3$ and $Al(OCH_2CH_3)_3$ where R is ethyl, propyl, butyl or phenyl and R' is ethyl, propyl or butyl has improved adhesion to metal surfaces.

3,719,635

METAL HYDROCARBONOXIDES IN ROOM TEMPERATURE VULCANIZABLE SILICONE ELASTOMERS

William H. Clark, Mount Pleasant, Thomas W. Greenlee, Midland, and Louis H. Toporcer, Ingersol Township, Midland County, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed June 18, 1971, Ser. No. 154,648
Int. Cl. C08f 11/04
U.S. Cl. 260—46.5 G 9 Claims

One package room temperature vulcanizable silicone elastomers with improved adhesion to metal surfaces are mixtures of polydiorganosiloxanes with hydroxyl, alkoxy or acetoxy endblocking, a silicon compound containing alkoxy or acetoxy functionality, a curing catalyst and a metal hydrocarbonoxide, such as $Fe(OR^{iv})_3$, $V(OR^v)_3$, $Co(OR^v)_2$, $MoO_2(OR^v)_2$, $Zn(OR^v)_2$, $Ce(OR^v)_3$ and $Al(OCH_2CH_3)_3$ where R^{iv} is ethyl, propyl, butyl or phenyl and R^v is ethyl, propyl or butyl.

3,719,636

METHOD FOR THE PREPARATION OF BIODEGRADABLE GLYCIDOL SURFACTANTS

John A. Wojtowicz, Cheshire, Conn., and Milton Lapkin, Barrington, R.I., assignors to Olin Corporation, New Haven, Conn.

Filed April 9, 1970, Ser. No. 27,107
Int. Cl. C07c 41/02, 41/10
U.S. Cl. 260—615 B 6 Claims

This invention relates to a novel method of preparing biodegradable glycidol surfactants by reacting selected aliphatic alcohols with glycidol in the presence of a polar, nonreactive, miscible solvent and to the surfactants produced by such method.

3,719,637

PROCESS FOR POLYMERIZING TETRAOXANE

Masaru Yoshida; Yoshiaki Nakase, and Akihiko Ito, all of Takasaki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed May 18, 1971, Ser. No. 144,636
Claims priority, application Japan, May 20, 1970, 45/42381; July 4, 1970, 45/58143
Int. Cl. C08f 1/18; C08g 1/00, 11/00
U.S. Cl. 260—67 FP 5 Claims

Tetraoxane is polymerized in the presence of both a carboxylic anhydride and a specific polymerization initiator, to obtain an oxymethylene polymer having excellent heat-stability. When thiirane or its derivatives, thiocyanates, or isothiocyanates are employed as the polymerization initiator, the thermal stability of the resulting polymer is further improved. An ionizing radiation or an ultraviolet light can concomitantly be employed before and/or in the course of polymerization.

3,719,638

RADIATION CURABLE ACRYLIC URETHANE MONOMERS

Thomas F. Huemmer, 51967 U.S. Rt. 31, South Bend, Ind., and Thomas J. Miranda, 16731 Brick Rd., Granger, Ind.

Continuation-in-part of Ser. No. 665,984, Sept. 7, 1967, abandoned. This application Oct. 29, 1969, Ser. No. 870,076
Int. Cl. C08g 22/16; C08d 1/00
U.S. Cl. 260—77.5 CR 13 Claims

A radiation curable composition is provided by reacting about one mole of an organic diisocyanate with about one mole of a hydroxyacrylate to form a mono-urethane adduct which is subsequently reacted with a styrene-allyl alcohol copolymer having a molecular weight between about 200 and 30,000, the reaction product being essentially free of unreacted isocyanate groups.

3,719,639

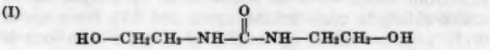
FLAME RESISTANT POLYURETHANE POLYMERS

Theodor Reetz, Columbia, S.C., and J. W. Britain, New Martinsville, W. Va., assignors to Baychem Corporation, New York, N.Y.

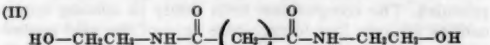
No Drawing. Filed Mar. 12, 1971, Ser. No. 123,873
Int. Cl. C08g 22/16
U.S. Cl. 260—75 NQ 8 Claims

Flame-resistant polyurethane polymers are prepared by reacting a polyisocyanate with an organic compound having active hydrogen atoms which are reactive with —NCO groups and a chain-extending composition comprising a mixture of 2,2-bis(bromomethyl)-1,3-propanediol with a compound having one of the following formulas:

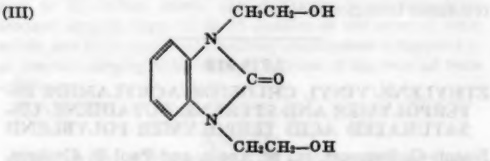
(I)



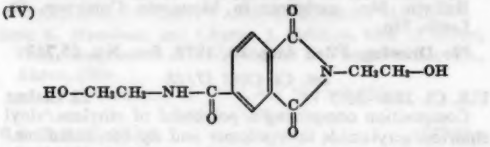
(II)



(III)



(IV)



wherein *n* is 0, 1 or 2.

3,719,640

POLY (AMIDE-IMIDE)POLYMERS HAVING RECURRING DIKETOPIPERAZINE GROUPS

Lester T. C. Lee, Parsippany, N.J., and Stephen S. Hirsch, New City, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 39,509, May 21, 1970. This application July 21, 1971, Ser. No. 164,933

Int. Cl. C08g *20/32*

U.S. Cl. 260—78 A 10 Claims

Novel linear polymers containing recurring diketopiperazine groups are prepared by polymerizing the salt of a diamine and a nitrilotricarboxylic acid having the formula $HOOCRN(CH_2COOH)_2$ wherein R is a phenylene or alkylene radical. The polymers contain quaternizable tertiary nitrogen atoms which impart valuable properties to the polymers. The polymers may be formed into fibers, films and shaped articles, and may be blended with other polymers to improve their properties.

3,719,641

POLYCARBONAMIDE HAVING IMPROVED BASIC DYE RECEPTIVITY

Norman Bernard Campbell, and Ross Nelson Frederick Wells, both of Arnprior, Ontario, Canada, assignors to Union Carbide Canada Limited, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 776,855, Nov. 12, 1968, abandoned. This application Feb. 1, 1971, Ser. No. 111,671

Int. Cl. C08g *20/06, 20/12*

U.S. Cl. 260—78 A 6 Claims

Nylon filaments are made more respective to basic dyes and differentially dye with basic dye in a bath containing acid and basic dyes by mixing the nylon with from 0.3 to 1.0 weight percent of glutaric acid, methyltetrahydrophthalic acid or 1,3,5-tricarboxypentane or alternatively with from 0.3 to 2.0 weight percent of glutaric anhydride, methyltetrahydrophthalic anhydride, α-2(2-carboxyethyl)glutaric anhydride or succinic anhydride.

3,719,642

INTERMEDIATES FOR P-BENZAMIDE POLYMERS

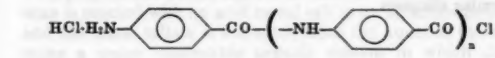
Thomas Albert Johnson, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed April 20, 1971, Ser. No. 135,807

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 A 10 Claims

A composition consisting essentially of a hydrochloride of a nitrogen containing base compound in admixture with a compound or mixtures of compounds of the formula:



where *n* is an integer of 1 to 50.

3,719,643

HIGH PRESSURE PROCESS FOR POLYETHYLENE PRODUCTION

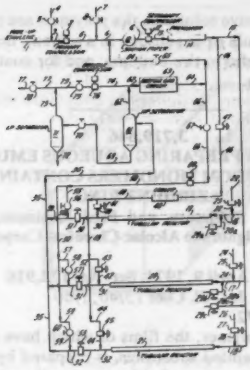
Ralph M. Knight, Los Angeles, Calif., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Jan. 25, 1971, Ser. No. 109,416

Int. Cl. C08f *1/60, 3/04*

U.S. Cl. 260—87.3 7 Claims

An improvement in a process for polymerizing ethylene is achieved by splitting the feed into at least two streams, continuously polymerizing each of the streams in the presence of free-radical initiator at elevated pressures and temperatures in separate reactor tubes, quenching the resulting reaction product stream, and separating and recovering polyethylene from the reaction product stream. The length of each of the reactor tubes is designed so that the reaction temperature peak occurs within the tube



adjacent to the outlet and is calculated based on the following equation:

$$L=\frac{\bar{v}W(t_p-t_i)}{AR(3600)}$$

where:

$\bar{v}$ is the specific volume in units of cubic volume of ethylene feed per unit of weight,

W is the ethylene feed rate through the reactor tube in units of weight per hour,

t_p is the peak temperature of the reaction,

t_i is the temperature of the ethylene feed at the inlet of the reactor tube,

A is the cross-sectional area of the reactor tube in units of square length,

R is the ethylene reaction rate in units of temperature rise per second,

3600 is the constant to convert seconds to hours.

3,719,644

METHOD FOR IMPROVING CRYSTALLINITY OF VINYLIDENE FLUORIDE POLYMERS

Masahiro Segawa and Yukichika Kawakami, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Filed June 15, 1971, Ser. No. 153,271

Claims priority, application Japan, June 20, 1970, 45/53,941

Int. Cl. C08f *3/22, 15/08*

U.S. Cl. 260—87.7 11 Claims

Polyvinylidene fluoride having improved crystallinity can be obtained by treating it with a solution of an inorganic electrolyte dissolved in water-soluble organic solvent or in a mixture of water and such organic solvent.

3,719,645

POLYARYLENE TETRASULFIDE POLYMERS

Norman A. Hiatt, Hamden, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Sept. 17, 1971, Ser. No. 181,633

Int. Cl. C08g *23/00*

U.S. Cl. 260—79 9 Claims

Monomeric cyclic diarylene bis-tetrasulfides are polymerized by heat alone at temperatures of 130°–210°C. to form new linear high polymers that are useful as adhesives, protective coatings, and formed articles.

For metal-to-metal adhesion, the polymers may be formed directly from the monomers at the locus of their application, between two metal surfaces to be adhered together, by heat and pressure.

For use as adhesive solutions, the polymers are produced by heating them in bulk or in solution in a solvent, the product in solution being useful in tire building, and for coating metallic and other surfaces.

3,719,646

METHOD OF PREPARING AQUEOUS EMULSION POLYMERS FROM MONOMERS CONTAINING AN AZIRIDINE RING

Robert Stecklen, Baltimore, and Fred Robinson, Columbia, both of Md., assignors to Alcolac Chemical Corporation, Baltimore, Md.

Filed April 9, 1971, Ser. No. 132,916
Int. Cl. C08f *15/40, 1/60*
U.S. Cl. 260—80.72 **7 Claims**

An emulsion polymer, the films of which have exceptional wet adhesion to painted substrates, is prepared by polymerizing an aqueous dispersion of either an acrylic acid ester or a methacrylic acid ester or a mixture thereof with an aqueous solution of an aziridinyl monomer previously neutralized with an acid whose PKa value is 3.7 or less, at a temperature of from 40° to 55° C., in the presence of a free radical type catalyst and preferably in the absence of air. Ordinarily, the pH of the said aqueous acid solution will be between 2 and 5, but this is not the significant factor in comparison with the PKa value. If the unneutralized aziridinyl polymer, i.e., copolymer or terpolymer, is desired, it can be liberated by treatment of the polymer with ion exchange resins, or alkali.

3,719,647

NEW POLYMERS AND DETERGENT COMPOSITIONS CONTAINING THEM

Frederick Edward Hardy, Newcastle-upon-Tyne, England; Peter Robson, Brussels, Belgium, and Peter Roscoe Hartley Speakman, Durham, England, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Jan. 25, 1971, Ser. No. 109,657
Int. Cl. C08f *15/14, 15/16*
U.S. Cl. 260—86.1 R **8 Claims**

New copolymers of acrylic and methyl acrylic acid (I) with acrylic and methacrylic acid — ethylene oxide condensates (II). The components have formulas:

I. $CH_2=C(R)COOM$

II. $CH_2=C(R)COO(C_2H_4O)_nH$

wherein R is H or CH_3; M is H, alkali metal, ammonium or amine; and n is at least one. The preferred ratio of (I) to (II) is about 2:1 and n is preferably from 20 to 100.

These compounds are mixed with surface-active agents to form built detergents. They are most effective as whiteness maintenance agents when added to a detergent composition at a 0.1 to 5 percent level by weight of the final product.

3,719,648

PROCESS FOR THE PREPARATION OF POWDERY HOMO- OR COPOLYMERS OF ETHYLENE

Johannes M. Frielink, Sittard, Netherlands, assignor to Stamicarbon N. V., Heerlen, Netherlands

Filed June 23, 1971, Ser. No. 155,798
Claims priority, application Netherlands, June 29, 1970, 7009555
Int. Cl. C08f *3/04, 15/04*
U.S. Cl. 260—85.5 R **11 Claims**

A process for the recovery of powdery homopolymers or copolymers of ethylene from a polymerization system is disclosed, wherein the corresponding monomers are subjected to polymerization conditions in a reactor and the resulting polymer, together with unconverted monomer, is discharged from the reactor and expanded to a lower pressure. At least part of this mixture is quenched by the addition of a cold gas, which gas is at least one of the polymerization monomers, to a temperature below the melting point of the polymer to solidify the polymer contained in such mixture as the form of a fine powder. Thereafter the powder is separated from the mixture and remaining unconverted monomer is recycled to the reactor. The process involves simpler equipment and reduced utility costs as compared to prior processes.

3,719,649

CROSSLINKED CHLOROPRENE/DIESTER POLYMER

Gert Jennes, Cologne-Flittard; Edmund Huther, Opladen, and Willi Wolff, Schildgen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 728,350, May 10, 1968. This application Feb. 19, 1971, Ser. No. 117,058
Claims priority, application Germany, June 6, 1967, F 52 611
Int. Cl. C08f *15/26*
U.S. Cl. 260—86.3 **3 Claims**

A crosslinked copolymer of chloroprene and a diester of an unsaturated carboxylic acid, a composition comprising said cross-linked copolymer and a benzene-soluble chloroprene and process for producing the same.

3,719,650

HYDROLYZABLE FUNCTIONAL SYLYL ALKYL ALKYL PEROXIDES

John Richard Joy, Stevenson, Md., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 82,854, Oct. 21, 1970. This application Dec. 8, 1971, Ser. No. 206,164
Int. Cl. C08f *3/68, 7/04*
U.S. Cl. 260—89.5 A **3 Claims**

Described herein are hydrolyzable functional silyl alkyl alkyl peroxides having the following general formula;

$$X_{3-n}(R_n)SiR'OOR''$$

wherein,

X is a hydrolyzable group, R is hydrogen or a monovalent organic radical which is bonded to the silicon atom through a carbon to silicon bond, R′ is an alkenylene, cycloalkenylene, alkarylalkylene, or aralkylene, R″ is an alkyl or aralkyl, and *n* is 0 to 2 inclusive. These hydrolyzable silyl alkyl alkyl peroxides are useful as initiators for the polymerization of monomers having olefinic unsaturation and are also useful in forming silicones.

3,719,651

HYDROXYBUTYLMETHYLCELLULOSE AS A PROTECTIVE COLLOID IN VINYL MONOMER POLYMERIZATION

George K. Greminger, Jr., and Ronald L. Glomski, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 1, 1971, Ser. No. 111,630
Int. Cl. C08f *3/30*
U.S. Cl. 260—92.8 W **3 Claims**

An improvement in the process for preparing polymers from substantially water-insoluble polymerizable ethylenically unsaturated monomer in aqueous suspension wherein such monomers form polymers which are insoluble in their monomer, said improvement comprising the use of hydroxybutylmethylcellulose as the protective colloid in the water-phase of an oil-in-water suspension system.

3,719,652
POLYMERIZATION OF CYCLOPENTENE

Wolfgang Oberkirch; Gottfried Pampus, and Peter Gunther, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 833,669, June 16, 1969, abandoned. This application May 5, 1971, Ser. No. 140,582

Claims priority, application Germany, June 21, 1968, P 17 70 688.6

Int. Cl. C08f *1/56*

U.S. Cl. 260—93.1 10 Claims

Process for producing cyclopentene polymers which comprises contacting cyclopentene at a temperature of from −60° to +60°C with a catalyst comprising

a tantalum compound (I)

a halogen compound (II)

an organo-aluminum compound (III)

the components being in a molar ratio of I : II : III = 1 : 0.3–10 : 0.5–15.

3,719,653
NICKEL π-ALLYL HALOGENOACETATES, THEIR USE AS CATALYSTS FOR THE STEREOSPECIFIC POLYMERIZATION OF UNSATURATED ORGANIC COMPOUND

Francois Dawans, 78 Bougival, France, assignor to Institut Francais Du Petrole Des Carburants Et Lubrifiants, Rueil Malmaison, France

Division of Ser. No. 753,769, Aug. 12, 1968, Pat. No. 3,660,445. This application July 23, 1970, Ser. No. 63,983

Claims priority, application France, Aug. 23, 1967, 67118816

Int. Cl. C08d *1/14, 3/06;* C08b *3/08*

U.S. Cl. 260—94.3 11 Claims

A process for stereospecific polymerization of conjugated diolefins with a catalyst which is the reaction product of allyl halogenoacetate and nickel carbonyl or nickel olefin complex.

3,719,654
PROCESS FOR PREPARING METAL SALTS OF TALL OIL

James N. Stone, Augusta, Ga., assignor to Continental Can Company, Inc., New York, N.Y.

No Drawing. Filed Apr. 19, 1971, Ser. No. 135,454

Int. Cl. C09f *1/04*

U.S. Cl. 260—97.5 5 Claims

A process for preparing metal tallates wherein tall oil soap is reacted with an acid metal salt in an aqueous media and the metal tallate is extracted from the aqueous media using a water immiscible organic solvent in which the metal tallate is soluble.

3,719,655
PROCESS FOR THE CRYSTALLIZATION OF THE AMMONIUM AND ALKALI METAL SALTS IN INSULIN

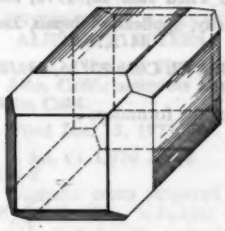
Richard Lee Jackson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 5, 1969, Ser. No. 882,563

Int. Cl. A61k *17/04;* C07a *7/00;* C07c *103/52*

U.S. Cl. 260—112.7 7 Claims

Insulin is isolated and purified from an insulin-containing solution by the adjustment of the basicity to about pH 7.2–10.0 and the alkali metal ion or ammonium ion concentration to about 0.2 M to 1.0 M, thereby causing crystallization of the alkali metal or ammonium salt of insulin. The method upgrades insulin from about 2 International Units (I.U.) per milligram to about 22–26 I.U. per milligram



while recovering 90–95 percent of the insulin from an aqueous-acid pancreatic extract.

3,719,656
NEW CYCLOPEPTIDES

Georges Jolles, Sceaux (Hauts-de-Seine), France, assignor to Rhone-Poulenc S.A., Paris, France

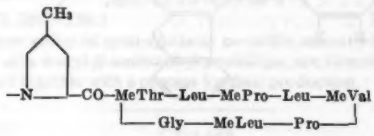
Continuation-in-part of Ser. No. 770,436, Oct. 24, 1968, abandoned. This application Dec. 24, 1969, Ser. No. 888,045

Claims priority, application France, Oct. 25, 1967, 67125842; March 19, 1968, 68,44421; Nov. 12, 1967, 6781425

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 4 Claims

Cyclopeptides having antitubercular activity derived from antibiotics of the formula: R-cyclopeptide A wherein cyclopeptide A designates a nonapeptide residue of the formula:



in which MePro signifies L-trans-4-methyl-proline; MeThr signified L-N-methylthreonine; MeVal signifies L-N-methylvaline; MeLeu signifies D-N-methylleucine; Pro signifies L-proline; Gly signifies glycine, and Leu signifies L-leucine, and R represents hydrogen or an alkanoyl, alkenoyl, alkadienoyl, alkoxycarbonyl, aroyl, aralkanoyl, arylsulphenyl, arylsulphinyl, aryl sulphonyl, cycloalkylcarbonyl, heterocyclylcarbonyl or heterocyclylakanoyl radical, or a residue of a linear or cyclic peptide radical attached through a carbonyl group to the nitrogen atom of the L-trans-4-methyl-proline grouping the the side chain of the cyclopeptide A, and non-toxic acid addition and quaternary ammonium salts thereof, possess antitubercular activity and activity against gram-positive and gram-negative microorganisms.

3,719,657

MONOAZO DYESTUFFS CONTAINING A CARBOXAMIDO-4(3H)-QUINAZOLONE GROUP

Kinjiro Hama, Nishinomiya, Nobuo Mishima, Hirakata, and Kazuo Miyamoto, Takarazuka, Japan, assignors to Sumitomo Chemical Co., Ltd.

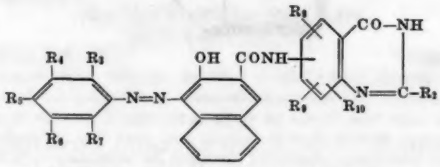
No Drawing. Filed Jan. 12, 1970, Ser. No. 2,405

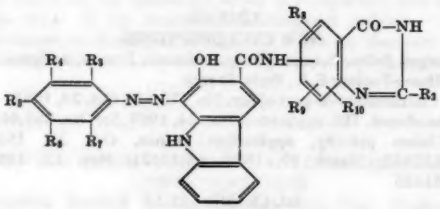
Claims priority, application Japan, Jan. 17, 1969, 44/3,704

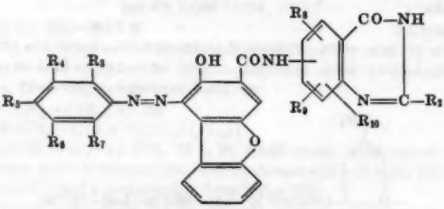
Int. Cl. C09b *29/36, 43/12*

U.S. Cl. 260—154 9 Claims

Compounds of the formulae:







wherein R_2 is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy (for second and third formulae only), phenyl, benzyl or methyl-, methoxy- or chlorine- substituted benzyl, each of R_3, R_4, R_5, R_6 and R_7 is hydrogen, chlorine, bromine, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, cyano, trifluoromethyl, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylsulfonyl, phenylsulfonyl, ureido, carbamoyl, N-C_1–C_4 alkylcarbamoyl, N-phenylcarbamoyl, sulfamoyl, N-C_1–C_4 alkylsulfamoyl, N-phenylsulfamoyl, acetyl, propionyl, butyryl, phenylacetyl, benzoyl, acetylamino, propionylamino, butyrylamino, phenylacetylamino or benzoylamino, and each of R_8, R_9 and R_{10} is hydrogen, chlorine, bromine, C_1–C_4 alkyl or C_1–C_4 alkoxy, are provided, which are useful as water insoluble dyestuffs characterized by high fastness to solvents, migration and light.

3,719,658

BENZIDINE YELLOW TYPE PIGMENT

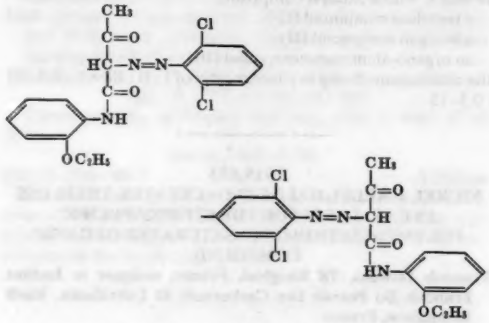
Joseph W. Conley, Fort Edward, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Filed March 12, 1969, Ser. No. 806,724

Int. Cl. C09b *35/10, 35/24*; C09d *11/16*

U.S. Cl. 260—176 1 Claim

A benzidine yellow type pigment of unusually good lightfastness and superior strength is described. The pigment, which is a compound of the formula



is produced by tetrazotizing 3,3′,5,5′-tetrachlorobenzidine and then coupling the tetrazotized product with aceto-acet-o-phenetidide. In a preferred method N,N′-diacetyl-3,3′,5,5′-tetrachlorobenzidine is hydrolyzed to the corresponding amine in situ in the acid solution which is to be used for the tetrazotizing step.

3,719,659

INTERMEDIATES FOR MAKING LINCOMYCINS AND PROCESS FOR PREPARING THE SAME

Barney J. Magerlein, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Feb. 10, 1970, Ser. No. 10,290

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 R 8 Claims

Lower-alkyl 1 - thio-α-D-galacto-hexodialdo-1,5-pyranosides useful as intermediates in the preparation of lincomycins are prepared by periodate oxidation of lower-alkyl 1-thio-α-D-galacto-hepto- and octopyranosides containing a hydroxyl group in the 7-position and a hydroxyl or amino group in the 6-position.

3,719,660

2-FURFURYLTHIOINOSINE-5′-PHOSPHATE COMPOUNDS

Kin-ichi Imai, Yoshio Yoshioka, Jun Toda, and Hisashi Aoki, all of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed June 10, 1970, Ser. No. 45,222

Claims priority, application Japan, June 13, 1969, 44/47113; June 21, 1969, 44/49180

Int. Cl. C07d *51/54*

U.S. Cl. 260—211.5 R 5 Claims

2-Furfurylthioinosine-5′-phosphate and a physiologically acceptable salt thereof have excellent ability for improving and/or enhancing the favor of foods and beverages. Moreover, there is a significant synergistic action between these compounds and monosodium glutamate. Also provided are novel starting materials for preparing these compounds.

3,719,661

STARCH THICKENER

John W. Robinson; George N. Bookwalter, and John V. Tuschhoff, all of Macon County, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Division of Ser. No. 476,742, Aug. 2, 1965, Pat. No. 3,437,493. This application Aug. 29, 1968, Ser. No. 778,882

Int. Cl. C08b *19/01*

U.S. Cl. 260—233.3 R 2 Claims

A starch thickener comprising phosphorus oxyhalide cross-linked hydroxypropyl cereal starch having a hydroxypropyl D.S. of at least 0.10 and pH 6.5 buffered salt CIV viscosity of about 200 to 400 gram-centimeters after 10 minutes and 190 to 300 gram-centimeters after 40 minutes prepared by reacting a phosphorus oxyhalide with granular hydroxypropyl cereal starch.

3,719,662

STARCH PHOSPHATE ESTERS

Martin M. Tessler, Edison, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.

Filed April 7, 1971, Ser. No. 132,167

Int. Cl. C08b *19/04*

U.S. Cl. 260—233.5 9 Claims

A method for the preparation of starch phosphate esters wherein aqueous slurries or dispersions of a starch base are reacted with o-carboxyaryl phosphates or salts thereof. The starch products may also be prepared employing non-aqueous solvents or by means of a dry reaction procedure.

3,719,663

PREPARATION OF CELLULOSE ETHERS

Eugene D. Klug, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 7, 1971, Ser. No. 150,709

Int. Cl. C08b *11/00*

U.S. Cl. 260—231 R 9 Claims

An improved process is provided for preparing cellulose ethers of the viscosity desired. Their viscosity is regulated during or after the etherification reaction used in their preparation. The viscosity regulating agents used are an organic hydroperoxide in conjunction with a metal catalyst. Now preferred are tert butyl hydroperoxide in conjunction with a cobalt or manganese salt.

3,719,664

WARP SIZING AGENT

Lester P. Hayes; Raymond L. Drury, Jr., and Edward H. Grosse, all of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of Ser. No. 12,859, Feb. 19, 1970, abandoned. This application Oct. 27, 1971, Ser. No. 192,841

Int. Cl. C08b *25/02*

U.S. Cl. 260—233.5 6 Claims

A method of acylating starch with dibasic acid anhydrides and forming salts of the acylated starch with amines devoid of Zerewitinoff hydrogen at pH 5.0–7.0 The resultant amine slats of the starch half esters are useful as sizing agents for yarns containing synthetic fibers.

3,719,665

CHONDROITIN SULPHURIC ACID SALTS

Albert H. Beaufour and André Esanu, Paris, France, assignors to Societe d'Etudes de Produits Chimiques, Issy-les-Maulineaux, Hauts-de-Seine, France

No Drawing. Filed Aug. 23, 1971, Ser. No. 174,126

Int. Cl. C07c *69/32*

U.S. Cl. 260—234 R 5 Claims

This invention relates to new salts of Chondroitin sulphuric acids, forms A and C, with betaine and pyridoxine. These compounds are useful for their therapeutic activity in the field of myocardial infarction and as anti-atheromatic agent.

Process for the preparation of the said compounds is indicated and pharmacological activity is described.

3,719,666

IMINO SUBSTITUTED α,β-UNSATURATED ALIPHATIC ESTERS

Richard J. Anderson, Clive A. Henrick, and John B. Siddall, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Filed Jan. 13, 1971, Ser. No. 106,273

Int. Cl. C07d *23/02*

U.S. Cl. 260—239 E 10 Claims

Novel imino aliphatic esters prepared by reaction of haloketone with alkali azide, reduction of ketone, and conversion of azido alcohol to the imino which are useful for the control of insects.

3,719,667

EPIMERIZATION OF 6-ACYLAMIDO AND 6-IMIDO PENICILLIN SULFOXIDE ESTERS

Gerald E. Gutowski, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Aug. 24, 1970, Ser. No. 66,594

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 11 Claims

This invention is addressed to a reversible process for the epimerization of 6α and 6β-epimers of 6-acylamido and 6-imido penicillin sulfoxide esters wherein either the α-epimer or the β-epimer is contacted with a N,O-bis-(trialkylsilyl)acetamide in the presence of an inert organic solvent to produce an equilibrium mixture of the α and β epimers.

3,719,668

SEMI-SYNTHETIC PENICILLIN ESTERS

Erling Knud Frederiksen, Holte, and Wagn Ole Godtfredsen, Vaerlose, both of Denmark, assignors to Lovens Kemiske Fabrik Produktion-saktieselskab, Ballerup, Denmark

Filed March 13, 1970, Ser. No. 19,462

Claims priority, application Great Britain, March 18, 1969, 14,218/69; July 21, 1969, 36,581/69The portion of the term of this patent subsequent to Oct. 10, 1989, has been disclaimed.

Int. Cl. C07d *99/14*

U.S. Cl. 260—239.1 7 Claims

A new group of semi-synthetic penicillin esters, which are esters of a α-aryl-β-aminoethyl penicillins, are described and claimed together with a process for their production.

3,719,669

AMINO (OR AMIDO)-PHENYL-ALKYL-BENZAZEPINE ANALGESICS AND NARCOTIC ANTAGONISTS

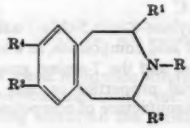
Bola Vithal Shetty, Bombay, India, assignor to Pennwalt Corportation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 711,897, March 11, 1968, abandoned. This application March 27, 1972, Ser. No. 238,637

Int. Cl. C07d *41/08*

U.S. Cl. 260—239 BB 21 Claims

Compounds of the general formula:



or acid addition salts thereof wherein R is aminophenyl-lower alkyl, lower alkanoylamidophenyl-lower alkyl, methyl-aminophenyl-lower alkyl, ethylaminophenyl-lower alkyl, or dimethylaminophenyl-lower alkyl in which said amino moiety is either ortho, meta, or para to said lower alkyl moiety; R^1 and R^2 are independently H or lower alkyl; R^3 and R^4 are independently H or OH or lower alkoxy. The compounds are useful as analgesics and narcotic antagonists.

3,719,670

SUBSTITUTED CARBINOL DERIVATIVES

Eugene E. Galantay, Morristown, and Dietmar A. Habeck, Dover, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 778,777, Nov. 25, 1968, abandoned. This application Sept. 10, 1970, Ser. No. 71,279

Int. Cl. C07c *169/20*, *173/00*

U.S. Cl. 260—239.55 C 11 Claims

The compounds are steroidal 17-allenyl carbinol derivatives, e.g., 17α-propadienylestra-4,9-dien-17β-ol-3-one. The compounds have, e.g., progestational activity and are useful in fertility control.

3,719,671

10-IMIDOYLPHENOTHIAZINES

Yao Hua Wu, and Walter G. Lobeck, Jr., both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed May 27, 1971, Ser. No. 147,667

Int. Cl. C07d *93/14*

U.S. Cl. 260—243 A 21 Claims

Novel 10-imidoylphenothiazines are prepared by reacting a phenothiazine which may have hydrogen, trifluoromethyl, methylthio, alkyl, alkoxy or halogen substituents in the 2 or 4 position with a carboxamide selected from the group consisting of amides and lactams in the presence of phosphorus oxychloride. Typical embodiments are 10-[2-(5-methyl-1-pyrrolinyl)]phenothiazine and 10-[2-(5,5-dimethyl-1-pyrrolinyl)]phenothiazine. The phenothiazine amidine products are useful as intestinal relaxant and antithromogenic agents.

3,719,672

4-SUBSTITUTED METHYLENE-7-AMINO-8-OXO-5-THIA-1-AZA-BICYCLO[4,2,0 OCT-2-ENE-2-CARBOXYLIC ACIDS

Karl Heusler, Basel, Switzerland; Robert Burns Woodward, Cambridge, Mass., and Ivan Ernest, Birsfelden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,639

Claims priority, application Switzerland, Dec. 11, 1968, 18499/68; July 8, 1969, 10372/69

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C 25 Claims

7-amino-4-methylene-8-oxo-5-thia-1-azabicyclo[4,2,0]oct-2-ene-2-carboxylic acid compounds, in which the 4-methylene group is substituted and the 7-amino group may be acylated exhibit antibacterial properties or may be used as intermediates for the manufacture of compounds having such properties.

3,719,673

DERIVATIVES OF 7-AMINOCEPHALOSPORANIC ACID

Hans Bickel, Binningen; Rolf Bosshardt, and Johannes Mueller, both of Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corp., Ardsley, N.Y.

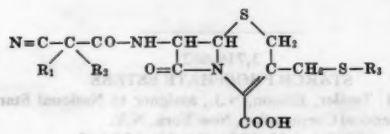
Filed Nov. 17, 1970, Ser. No. 90,470

Claims priority, application Switzerland, Nov. 28, 1969, 17731/69; Dec. 24, 1969, 19243/69; Feb. 17, 1970, 2281/70; April 20, 1970, 5877/70; June 2, 1970, 8199/70

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C 13 Claims

Compounds of the formula



I

in which R_1 and R_2 each represent a hydrogen atom or an unsubstituted or substituted monovalent hydrocarbon radical or an unsubstituted or substituted monovalent heterocyclyl radical bound by way of a carbon atom, or together represent a divalent hydrocarbon radical that may be interrupted by one or more hetero atoms and/or substituted, and R_3 represents a heterocyclyl radical having aromatic character which is bound to the sulphur atom by way of a carbon atom and which contains at least two nitrogen atoms and a further hetero atom selected from the group consisting of nitrogen, oxygen and sulphur. They have antimicrotial activity.

3,719,674

1,2-SUBSTITUTED INDENE COMPOUNDS

Donald L. Trepanier, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 757,102, Sept. 3, 1968, Pat. No. 3,636,116. This application Feb. 8, 1971, Ser. No. 113,744

Int. Cl. C07d *87/14*

U.S. Cl. 260—244 R 10 Claims

1,2-Substituted indene compounds such as 3-(substituted phenyl)-3a,8b-dihydro-4H-indeno[2,1-d]-isoxazoles are prepared by the reaction of indene with substituted chlorobenzhydroxamic acid. The indeno-isoxazole compounds can be converted to other substituted indene compounds by reduction to produce 2-(α-amino-substituted-benzyl)-1-indanols, which in turn can be reacted with cyanogen bromide to produce substituted α-(1-hydroxy-2-indanyl)benzylcyanamides, which can be cyclized to prepare further substituted indene compounds, namely, 2-amino-4-(substituted phenyl)-4,4a,5,9b-tetrahydroindeno[2,1-e]oxazines. The compounds are useful in the study of animal behavior and are particularly useful as potentiators of amphetamine and of barbiturates such as hexobarbital.

3,719,675

DINITROPHENOXYMETHYL AMINES

Joseph W. Baker, Kirkwood, and Ignatius Schumacher, Webster Groves, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed July 13, 1970, Ser. No. 54,605

Int. Cl. C07d *87/32*

U.S. Cl. 260—247.7 C 2 Claims

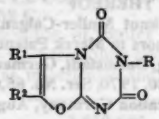
Dinitrophenoxymethyl amines as new chemical compounds. These compounds have been found to be useful in the control of bacteria.

3,719,676
ANTIINFLAMMATORY OXAZOLO TRIAZINE COMPOUNDS

George Crank, Kensington, New South Wales, Australia, assignor to Lilly Industries Limited, London, England

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,791
Int. Cl. C07d 99/02
U.S. Cl. 260—248 NS 4 Claims

Oxazolo triazine compounds of the formula:



wherein R is aryl or substituted aryl, R^1 and R^2 independently represent hydrogen, lower alkyl, phenyl or substituted phenyl and additionally, when R^2 is hydrogen, R^1 represents trifluoromethyl or —COX where X is lower alkoxy or amino, are useful in the treatment of inflammation in warm-blooded mammals when administered in daily doses between 5 and 350 mg./kg. of body weight.

3,719,677
TETRAHYDRO-3,6-DIPHENYLIMIDAZO(1,2-B)-AS-TRIAZINES

Bernard Loev, Broomall, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed Sept. 8, 1971, Ser. No. 178,838
Int. Cl. C07d 55/10
U.S. Cl. 260—249.5 4 Claims

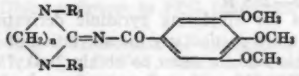
The compounds are tetrahydro-3,6-diphenylimidazo-[1,2-b]-as-triazines which have hypotensive activity.

3,719,678
2-ACYLIMINO-1,3-DIAZACYCLOALKANES

Robert Armistead Lucas, Mendham, and Herbert Morton Blatter, Summit, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 884,322, Dec. 11, 1969, Pat. No. 3,627,889, which is a continuation-in-part of Ser. No. 839,704, July 7, 1969, Pat. No. 3,655,895. This application April 7, 1970, Ser. No. 26,433
Int. Cl. C07d 51/18, 49/30, 53/02
U.S. Cl. 260—256.4 H 3 Claims

1-R_1-2-trimethoxybenzoylimino-1,3-diazacycloalkanes, e.g. those of the formula



R_1 = aliphatic or cycloaliphatic radical
R_3 = H, alkyl or alkanoyl
n = 2-4

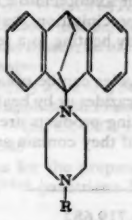
or salts thereof exhibit hypnotic effects.

3,719,679
9-(1-PIPERAZI NYL)-9,10-DIHYDRO-9,10-ET HANOANTHRACENES AND THEIR SALTS

Jacques Robert Boissier, Paris, and Roger Ratouis, Saint-Cloud, both of France, assignors to Societe anonyme dite: Societe Industrielle pour la Fabrication des Antibiotques (S.I.F.A.), Puteaux, France

Continuation of Ser. No. 730,650, May 20, 1968, abandoned. This application Aug. 20, 1971, Ser. No. 173,685
Claims priority, application France, June 8, 1967, 67109575; Sept. 6, 1967, 67120105
Int. Cl. C07d 51/70
U.S. Cl. 260—268 PC 2 Claims

The compounds are new 9-(1-piperazinyl)-9,10-dihydro-9,10-ethanoanthracenes and their acid addition and quaternary ammonium salts; they correspond to the formula:



(1)

R : hydrogen atom, lower alkyl, lower hydroxyalkyl, lower alkoxycarbonyl or lower hydroxyalkoxyalkyl radical or —X—Ar radical (X : lower alkylene radical — Ar : phenyl radical eventually substituted by halogen atoms, lower alkyl or lower alkoxy radicals).

They are very useful substances for human therapeutics, namely as antihistaminics and antianaphylactics.

Processes for the preparation of compounds of formula 1.

3,719,680
NOVEL N-(PIPERAZINYLETHYL)-CARBAMATES

Franklin W. Abbate, North Haven, and William J. Farrissey, Jr., Northford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

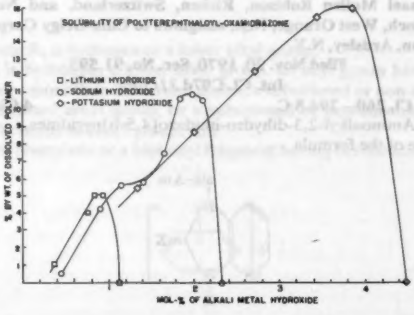
Filed March 2, 1970, Ser. No. 15,925
Int. Cl. C07d 51/70
U.S. Cl. 260—268 R 4 Claims

N-(piperazinylethyl)-carbamates are prepared in good yield by reacting at an elevated temperature an N-hydrocarbylcarbamate with triethylenediamine or an N-hydrocarbylcarbamate, triethylenediamine and an added alkylating agent. The N-piperazinyl derivatives so-formed are useful as catalysts in the manufacture of polyurethanes, in the preparation of acid-soluble and acid-dyeable polyurethanes.

3,719,681
POLYACYLOXAMIDRAZONE SOLUTIONS

Hans-Dieter Rupp, Erlenbach; Erhard Siggel, Seckmauern; Gerhard Meyer, Obernburg; Ernst-Georg Worbs; Michael Wallrabenstein, both of Erlenbach, and Albert Schopf, Hering/Odw., all of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 719,027, April 5, 1968, Pat. No. 3,583,953. This application July 6, 1970, Ser. No. 60,991
Claims priority, application Germany, April 8, 1967, G 49779; April 8, 1967, G 49780
Int. Cl. C08g 51/24; C08j 1/46; C09d 5/02; C09g 1/04
U.S. Cl. 260—29.2 N 10 Claims


SOLUBILITY OF POLYTEREPHTHALOYL-OXAMIDRAZONE
□ - LITHIUM HYDROXIDE
○ - SODIUM HYDROXIDE
○ - POTTASIUM HYDROXIDE
% BY WT OF DISSOLVED POLYMER
MOL-% OF ALKALI METAL HYDROXIDE

An aqueous alkali metal hydroxide solution in which there is dissolved a polyacyloxamidrazone, the resulting alkaline polymer solution being useful for the production of heat-re-

sistant shaped products such as filaments, films, coatings and the like. A process for producing these products includes the steps of forming the polymer solution into a filament or film in contact with an acid precipitation bath, washing the precipitate and subsequently heating to a temperature of approximately 230°–350°C.

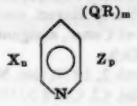
It is known that polytriazoles can be obtained by the reaction of dinitriles with dihydrazides or by heating cyanocarboxylic hydrazides. The resulting products are resistant to high temperatures, particularly if they contain aromatic groups in the polymer chain.

3,719,682
(THIO-, SULFINYL-AND SULFONYL) CONTAINING PYRIDINE COMPOUNDS

Penelope B. Domenico, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 861,506, Sept. 26, 1969, Pat. No. 3,639,413. This application May 17, 1971, Ser. No. 144,332
Int. Cl. C07d 31/50
U.S. Cl. 260—294.8 F **4 Claims**

The present disclosure is directed to (thio-, sulfinyl- and sulfonyl) containing pyridine compounds corresponding to the formula



wherein R represents hydrogen, alkyl, monohaloloweralkyl, alkenyl, monohaloalkenyl, cycloalkyl, monohalocycloalkyl, phenyl, aralkyl, alkaryl or monohalophenyl; Q represents sulfide (—S—), sulfinyl

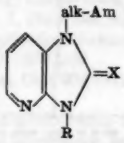
each X independently represents chlorine, bromine or fluorine; Z represents one of cyano (—CN), carbamoyl (—$CONH_2$) or carboxy (—COOH) or the salts thereof; *n* represents an integer of 0 to 3, inclusive; *m* represents an integer of 1 to 3, inclusive; *p* represents an integer of 1 or 2 and the sum of *n*+*m*+*p* equals an integer of 2 to 5, inclusive, with the proviso that when Q is other than sulfide (—S—), R is other than hydrogen, and when R is H, *m* is not greater than 2. The preparation of these compounds and their utility as pesticides is also taught.

3,719,683
IMIDAZO(4,5-B)PYRIDINES

Michael Mullen Robison, Riehen, Switzerland, and Neville Finch, West Orange, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 20, 1970, Ser. No. 91,595
Int. Cl. C07d 31/50
U.S. Cl. 260—294.8 C **4 Claims**

1-Aminoalkyl-2,3-dihydro-imidazo[4,5-b]pyridines, e.g. those of the formula



Am = an amino group
alk = alkylene with at least 2C
X = O or S
R = H, aliphatic, araliphatic or aromatic radical

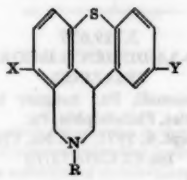
acyl derivatives, N-oxides, quaternaries or salts thereof are antidepressants.

3,719,684
1,2,3, 11B-TETRAHYDROPYRIDO-[3,4,5:M,N] THIOXANTHENES, THE ACID ADDITION SALTS THEREOF

Richard Unger, and Helmut Muller-Calgan, both of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschraenkter Haftung, Darmstadt, Germany

Filed Aug. 20, 1970, Ser. No. 65,680
Claims priority, application Germany, Aug. 22, 1969, P 19 42 755.5
Int. Cl. C07d 31/50
U.S. Cl. 260—294.8 A **15 Claims**

1,2,3,11b-Tetrahydropyrido[3,4,5:m,n]thioxanthenes of the formula



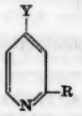
wherein X and Y each are H, alkyl of 1-4 carbon atoms or Cl and R is H or alkyl of one to four carbon atoms have psychotropic activity, including tranquilizing, hypnotic, antidepressant and narcosis-potentiating activity.

3,719,685
PROCESS FOR THE ALKYLATION OF PYRIDINE DERIVATIVES

Francesco Minisci and Franco Bertini, Milan, Remo Galli, Torricella del Pizzo, and Adolfo Quilico, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Apr. 9, 1971, Ser. No. 132,902
Claims priority, application Italy, Apr. 14, 1970, 23,273/70; July 30, 1970, 28,087/70
Int. Cl. C07d 31/36
U.S. Cl. 260—295 R **9 Claims**

A process for alkylating pyridinic derivatives is disclosed, and more particularly the alkylation of derivatives of isonicotinic acid, in order to obtain 2-alkyl derivatives having the formula:



wherein R represents an alkyl group having from 1 to 4 carbon atoms and Y represents a hydrogen atom or a functional group COOR' (wherein R' is an alkyl group having from 1 to 4 carbon atoms), $CONH_2$ or CN, the process being characterized in that the pyridinic derivative is treated in an acid aqueous solution with a mixture prepared separately from a dialkylketone having from 4 to 6 carbon atoms and from hydrogen peroxide, in the presence of a ferrous salt, under atmospheric pressure and at a temperature between 0° and 50° C.

3,719,686
THIOPHOSPHATE DERIVATIVES OF TRIAZOLINE THIONES

Tony Cebalo, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Continuation-in-part of application Ser. No. 835,221, June 20, 1969. This application Apr. 28, 1970, Ser. No. 32,715

Int. Cl. C07f *9/16, 9/24, 9/40*

U.S. Cl. 260—308 C 11 Claims

A novel composition of matter comprising phosphate derivatives of Δ^2-1,2,4-triazoline compounds having highly desirable utility as insecticides and acaricides.

3,719,687
N-(2-DIALKYLAMINOALKYLENE)AMIDES OF 1,1-DIHYDROPERFLUOROALKOXY-SUBSTITUTED ARYL ACIDS AND SALTS THEREOF

Arthur Mendel, Vadnais Heights, and William E. Coyne, Woodbury, both of Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

Filed July 22, 1970, Ser. No. 57,352

Int. Cl. C07c *103/30*; C07d *27/02*

U.S. Cl. 260—326.3 16 Claims

N-(2-Dialkylaminoalkylene)amides of aromatic acids. Also included are pharmaceutically acceptable acid addition salts thereof. These compounds have valuable antiarrhythmic activity.

3,719,688
PROCESS FOR THE PRODUCTION OF 2,2-DIHYDROCARBYL - 2,3 - DIHYDRO-BENZO - 1,3-OXAZONES-4

Peter Teichert, Germering, and Hans-Ludwig Vogel, Unterpfaffenhofen, Germany, assignors to Chemische Fabrik Aubing Dr. Kurt Bloch Nachf., Munich, Germany

No Drawing. Filed July 13, 1970, Ser. No. 54,587

Claims priority, application Germany, July 14, 1969, P 19 35 754.1

Int. Cl. C07d *87/08*

U.S. Cl. 260—244 R 6 Claims

Salicylamide is reacted with a ketone, using excess ketone as solvent. The reaction is carried out by means of a carboxylic acid anhydride in the presence of a substance of the class consisting of proton donors and Lewis acids at temperatures up to 70° C.

3,719,689
ALPHA,ALPHA-DIHALO-BETA-LACTONES

Donald A. Reich, Barberton, and Henry C. Stevens, Akron, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation of application Ser. No. 660,617, Aug. 15, 1967, which is a continuation-in-part of application Ser. No. 547,412, May 4, 1966. This application Mar. 26, 1970, Ser. No. 20,478

Int. Cl. C07d *3/00*

U.S. Cl. 260—343.9 2 Claims

Alpha,alpha-dihalo-beta-lactones are prepared by reacting a dihaloketene with a carbonyl compound, optionally in the presence of a solvent. The lactones can be polymerized to yield polyesters.

3,719,690
BASIC AMINO-ACID SALTS OF TOCOPHERYLSUCCINATE

Shizumasa Kijima, and Norio Minami, both of Tokyo, Japan, assignors to Eisai Co. Ltd., Tokyo, Japan

Filed Nov. 5, 1970, Ser. No. 87,304

Claims priority, application Japan, Nov. 13, 1969, 44/90479

Int. Cl. C07d *7/22*

U.S. Cl. 260—345.5 6 Claims

Water-soluble basic amino-acid salts of tocopherylsuccinate are prepared by reacting tocopherylsuccinate with the basic amino-acid, such as arginine, lysine and ornithine.

3,719,691
7α-METHYL-13β-ALKYL-17α-HYDROCARBYL-17β-OXY-$\Delta^{4,9,11}$-GONATRENE-3-ONES

Robert Bucourt; Lucien Nedelec, both of Clichy-sous-Bois, and Jean-Claude Gasc, Bondy, all of France, assignors to Roussel Uclaf, Paris, France

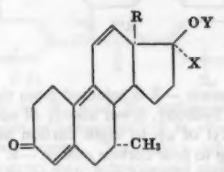
Filed July 27, 1970, Ser. No. 58,666

Claims priority, application France, July 28, 1969, 6925700

Int. Cl. C07c *167/14*

U.S. Cl. 260—397.45 4 Claims

A novel process for the preparation of 7α-methyl-13β-R-17α-X-17β-OY-$\Delta^{4,9,11}$-gonatriene-3-ones of the formula



I

wherein R is lower alkyl of one to four carbon atoms, X is saturated or unsaturated, substituted or unsubstituted, straight or branched aliphatic hydrocarbon of one to four carbon atoms and Y is selected from the group consisting of hydrogen and acyl of an organic carboxylic acid of one to 18 carbon atoms and novel intermediates formed therein.

3,719,692
NOVEL AMINO-SUBSTITUTED BENZOATES

Reginoldus Havinga, Schalkhaar, and Pieter D. Swaters, Lochem, both of Netherlands, assignors to Koninklijke Industrieele Maatschappy Noury & Van der Lande N.V., Deventer, Netherlands

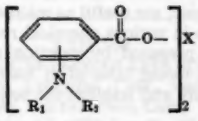
Filed July 8, 1970, Ser. No. 53,315

Claims priority, application Netherlands, July 24, 1969, 6911367

Int. Cl. C07c *103/32*

U.S. Cl. 260—404.5 20 Claims

Ultraviolet light absorbing compounds for polymers and copolymers are disclosed having the general formula:



wherein R_1 is hydrogen or a lower alkyl group;

R_2 is hydrogen, a lower alkyl group, an acyl group having nor more than 20 carbon atoms, a substituted or non-substituted aroyl group, or a substituted or non-substituted benzene sulfonyl group; and

X is phenylene or a biphenyl fragment having the formula:

wherein Y represents hydrogen or a halogen, and

Z is a sulfonyl group or an alkylidene group having from three to eight carbon atoms.

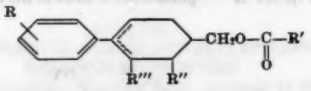
3,719,693

ALKENYL ESTERS OF 2 (LOWER ALKYL)-3-(LOWER ALKYL)-4-ACYL 3-OR-4 CYCLOHEXENCARBINOLS

George Karmas, Bound Brook, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 728,900, May 14, 1968, Pat. No. 3,557,129. This application Sept. 14, 1970, Ser. No. 72,181
Int. Cl. C07c *69/52, 33/06*
U.S. Cl. 260—410.5 3 Claims

Compounds of the general formula



are disclosed wherein —R is selected from the group consisting of hydrogen, hydroxy, lower alkoxy of up to eight carbon atoms, lower alkyl of up to eight carbon atoms, and lower alkyl anilino of up to four carbon atoms; —R′ is selected from the group consisting of alkyl and alkenyl of up to 20 carbon atoms, cycloalkyl lower alkyl of up to three carbon atoms in the alkyl portion, adamantyl, pyridyl, furyl, lower alkyl carboxylic acids and their alkali metal salts, esters and carbamates; and R″ and R‴ are selected from the group consisting of lower alkyl of up to three carbon atoms. These compounds exhibit estrogenic properties and when given in a single subcutaneous dose have long acting effects in the suppression of animal reproduction.

3,719,694

SOLID NITROLOTRIACETATE-IRON AND ZINC METAL COMPLEXES

William A. Feiler, Kirkwood, and Chung Yu Shen, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 29, 1969, Ser. No. 862,069
Int. Cl. C07f *3/06, 15/02*
U.S. Cl. 260—429.9 7 Claims

Solid nitrilotriacetate (NTA)-metal complexes having a molar ratio of at least 1.5 to 1, the metal being cobalt, iron, nickel or zinc, are useful as micronutrients for plants and as catalysts in various chemical reactions. The solids complexes are prepared by reaction of the metal salts with NTA in a molar ratio of at least 1:1.5. An acid is used to adjust pH and stabilize the solid complexes.

3,719,695

NOVEL PROCESS FOR THE PREPARATION OF ALKYLALUMINUM HALIDES OR ALCOHOLATES & TRIALKYLBORANES

Scott Hubert Eidt, Seabrook, Tex., assignor to Texas Alkyls, Inc., Deer Park, Tex.

Filed Oct. 20, 1970, Ser. No. 82,527
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 A 15 Claims

There is disclosed a convenient process for the simultaneous preparation of alkylaluminum halides or alcoholates and trialkylboranes by means of the reaction between a boron trihalide or trialcoholate and an aluminum trialkyl. Novel dialkylaluminum halides and alkylaluminum alcoholates resulting from this process are also disclosed.

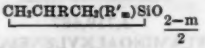
3,719,696

ORGANOSILICON POLYMERS CONTAINING SILACYCLOBUTANE STRUCTURES

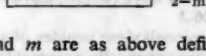
David Andrew Jonas, Pencoed, and William John Owen, Penarth, Wales, assignors to Dow Corning Limited, London, England

No Drawing. Filed Mar. 12, 1971, Ser. No. 123,855
Int. Cl. C07d *103/02;* C07f *7/08*
U.S. Cl. 260—448.2 D 3 Claims

Organosilicon homopolymers and copolymers containing



units wherein R is H or lower alkyl, R′ is hydrocarbyl, fluorohydrocarbyl or alkoxyalkyl and *m* is 0 or 1, are prepared by hydrolysis or cohydrolysis of silanes containing



where R, R′ and *m* are as above defined and Y is a hydrolyzable atom or group. These new polymers are useful as water repellents and coating compositions on textiles, glass fibers and powdery substrates as well as in manufacture of silicon rubbers and resins.

3,719,697

TRIS-TRIMETHYLSILOXY AMINES

Keith W. Michael, and Yolanda A. Peters, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sept. 29, 1971, Ser. No. 184,917
Int. Cl. C07f *7/10*
U.S. Cl. 260—448.2 N 3 Claims

Amines of the formula $(Me_3SiO)_2Si(CH_2)_3NHMe$ and $(Me_3SiO)_2Si(CH_2)_3NMe_2$ are useful as bactericides and fungicides.

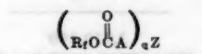
3,719,698

POLYFLUORINATED ESTERS OF ACIDS CONTAINING SILICON AND AMINO GROUPS

Giuliana C. Tesoro, Dobbs Ferry, N.Y., and Richard Ring, Wood-Ridge, N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

Continuation-in-part of Ser. No. 178,572, March 9, 1962, Pat. No. 3,575,961. This application Nov. 27, 1967, Ser. No. 685,946
Int. Cl. C07c *101/20;* C07d *23/06;* C07f *7/13*
U.S. Cl. 260—448.8 R 4 Claims

Polyfluorinated esters of the formula



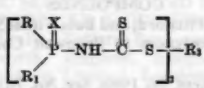
wherein R_f is a polyfluorinated hydrocarbon radical containing at least three fluorine atoms and up to 20 carbon atoms, A is an alkylene radical of up to six carbon atoms, Z is the residue of an amine component selected from the group consisting of amines and amine slats which have had at least one hydrogen atom removed, and *q* is an integer selected from 1 and 2, useful as textile finishing agents.

3,719,699
PROCESS FOR THE PRODUCTION OF POLYISOCYANATES
James D. McClure, and George W. Conklin, both of Oakland, Calif., assignors to Shell Oil Company, New York, N.Y.
Filed Dec. 31, 1970, Ser. No. 103,347
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 PC 14 Claims

An improved process for preparing carbocyclic aromatic isocyanates comprises contacting a carbocyclic aromatic polynitro compound with carbon monoxide in the presence of a catalyst system consisting of certain noble metal halides, heteroaromatic nitrogen compounds and a metal molybdate wherein the metal is iron or manganese.

3,719,700
BIS-PHOSPHORYLATED IMIDODITHIOCARBONATES AND METHODS FOR THEIR PREPARATION
Roger Williams Addor and David Edgar Ailman, Pennington, N.J., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Continuation-in-part of application Ser. No. 640,836, May 24, 1967. This application July 27, 1970, Ser. No. 58,677
Int. Cl. C07c *155/08*
U.S. Cl. 260—455 P 6 Claims

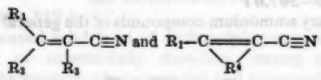
Alkylene - bis-phosphinyldithiocarbamates represented by the structure:



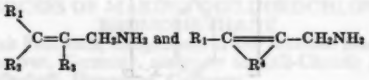
wherein R and R_1 are each members selected from the group consisting of lower alkyl, lower alkoxy and phenyl; X is sulfur and oxygen; and R_3 is a lower alkylene radical, such as ethylene, lower alkyl substituted ethylene, trimethylene, lower alkyl substituted trimethylene, oxydimethylene, tetramethylene and lower alkyl substituted tetramethylene. They find utility as insecticides and arachnicides and are highly effective against both the larval and adult stages of insects.

3,719,701
PROCESS FOR THE PREPARATION OF UNSATURATED NITRILES
Hartwig C. Bach, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Nov. 23, 1970, Ser. No. 92,165
Int. Cl. C07c *121/00*
U.S. Cl. 260—465.9 5 Claims

Nitriles of the formula



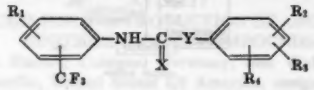
are prepared by the catalytic oxidation of an amine of the formula



respectively, in the liquid phase at temperatures between about —5° C. and about 150° C. where molecular oxygen is the oxidant and a cupric ion-nitrogen base complex is the catalyst. R_1, R_2 and R_3 represent hydrogen or monovalent organic radicals and R^4 represents a divalent organic radical, wherein said radicals are not oxidizable and do not inactivate the catalyst under the reaction conditions of the process.

3,719,702
NEW CARBAMATES USEFUL AS ANTHELMINTIC AGENTS
Walter Traber, Riehen; Alfred Margot, Basel, and Jean-Jacques Gallay, Baselland, all of Switzerland, assignors to Geigy Chemical Corporation, Greenburgh, N.Y.
Division of Ser. No. 549,497, May 12, 1966. This application April 4, 1969, Ser. No. 835,277
Claims priority, application Switzerland, May 18, 1965, 6927/65
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C 1 Claim

There are disclosed anthelmintic compositions containing carbamates and thiocarbamates of the formula



in which each of R_1 and R_2 independently represents hydrogen, halogen or halogenoalkyl; R_3 represents hydrogen, halogen, nitro, cyano, hydroxyl, amino, carbamoyl, sulphamoyl, phenoxy or sulphonic acid group, alkyl, alkenyl, halogenoalkyl, aralkyl, alkoxy, alkylthio, alkoxyalkyl, alkylthioalkyl, alkylsulphinyl, alkylsulphonyl, S-alkylsulphonylamino, alkylsulphamoyl, dialkylsulphamoyl, alkylcarbamoyl, dialkylcarbamoyl, alkylamino, dialkylamino, acylamino, acyl or carbalkoxy; R_4 represents hydrogen, halogen or alkyl; and X and Y each independently represents oxygen or sulphur. These compounds and their salts have anthelmintic properties and can be incorporated into animal feeds.

3,719,703
SEPARATION OF SULFONIC ACIDS FROM SULFURIC ACID
James S. Fritz, Ames, Iowa, Robert K. Gillette, Kettering, Ohio, and Donald R. Beuerman, Ames, Iowa, assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Apr. 29, 1969, Ser. No. 820,318
Int. Cl. C07c *143/24*
U.S. Cl. 260—505 P 1 Claim

A method of separating aromatic sulfonic acids from sulfuric acid and sulfates contained in an aqueous solution by contacting the solution with a long-chain tertiary aliphatic amine so that the sulfonic acid is taken up by the amine, separating the amine from the aqueous solution and back-extracting the sulfonic acid from the amine.

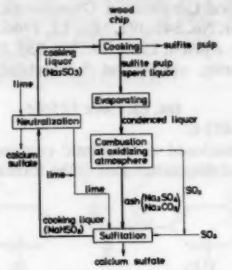
3,719,704
COLOR REDUCTION OF OLEFIN SULFONATES
David M. Marquis, Lafayette, Calif., assignor to Cheron Research Company, San Francisco, Calif.
Filed May 13, 1970, Ser. No. 37,041
Int. Cl. C07c *143/02*, *143/16*
U.S. Cl. 260—513 R 7 Claims

The color of an olefin sulfonate is improved by treatment of the olefin prior to sulfonation with minor amounts of sulfur trioxide, slaked lime and bauxite.

3,719,705
METHOD FOR MANUFACTURING SULFITE PULP COOKING LIQUOR FROM SULFITE PULP SPENT LIQUOR
Akio Mita, and Toshio Ishida, both of Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan
Filed Dec. 28, 1970, Ser. No. 101,984
Claims priority, application Japan, Jan. 20, 1970, 45/527070; Dec. 27, 1969, 44/104670
Int. Cl. C01f *11/46*; C01d *5/14*
U.S. Cl. 423—519 1 Claim

Sulfite pulp cooking liquor is produced from sulfite pulp spent liquor by combusting condensed sodium-based spent

liquor in an oxidizing atmosphere, adding lime to and blowing sulfur dioxide gas into an aqueous solution of the ash so obtained as to produce an aqueous solution of sodium bisulfite containing calcium sulfate and separating out the calcium



sulfate. Alternately, the condensed spent liquor is combusted in a reducing atmosphere, sulfuric acid is added to the resultant smelt to produce an acid solution to which lime is added and into which sulfur dioxide gas is blown and the calcium sulfate produced is separated.

3,719,706

PROCESS FOR OBTAINING 6-HEXANALOIC ACID

Jean Claude Brunie; Michel Costantini; Noel Crenne, all of Lyon, and Michel Jouffret, Villeurbanne, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed June 3, 1970, Ser. No. 43,193

Claims priority, application France, June 4, 1969, 6918411

Int. Cl. C07c *51/18*

U.S. Cl. 260—533 C **15 Claims**

6-Hexanaloic acid is obtained from by-products present in cyclohexyl hydroperoxide solutions, obtained by oxidation of cyclohexane in the liquid phase, without a metallic catalyst, by means of a gas containing molecular oxygen, by washing said cyclohexyl hydroperoxide solutions with water, separating the aqueous wash solutions, and subjecting the 6-hydroperoxyhexanoic acid contained in the wash solutions to deperoxidation by means of a chromium catalyst, e.g. chromium oxide or hydrated chromium chloride, in aqueous solution.

3,719,707

POLYHALOALKOXY SALICYLANILIDES AND THIOS ALICYLANILIDES

Helmut H. Mrozik, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 856,213, Sept. 8, 1969, abandoned. This application Aug. 3, 1971, Ser. No. 168,741

Int. Cl. C07c *103/32*

U.S. Cl. 260—551 S **7 Claims**

There are provided novel salicylanilides and thiosalicylanilides substituted with halogen and polyhalogenated ethoxy which are useful as antibacterial and anthelmintic agents. The substituted salicylanilides and thiosalicylanilides are prepared by condensing the desired aniline ether with the corresponding salicylic acid or salicylic acid halides.

3,719,708

BETA-SEMICARBAZIDE PROPIONIC ACID HYDRAZIDE

Wilhelm Thoma, Bergisch Neukirchen; Harald Oertel, Odenthal-Gloebusch; Heinrich Rinke, Leverkusen-Schlebusch, and Ulrich Bahr, Dormagen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 830,128, June 3, 1969, Pat. No. 3,640,937. This application Nov. 20, 1970, Ser. No. 91,563

Int. Cl. C07c *133/02*

U.S. Cl. 260—554 **1 Claim**

Beta-semicarbazide propionic acid hydrazide is disclosed as a compound useful for chain extension in preparation of highly elastic linear segmented polyurethanes with excellent thermal and hydrothermal properties.

3,719,709

CERTAIN 2-ISONITROSOALKYL-15,16-DIHYDROPYRENES

Luther A. R. Hall, Woodcliff Lake, N.J.; John A. Gurney, Tarrytown, N.Y., and Harris B. Renfroe, Montvale, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 635,287, April 7, 1967, Pat. No. 3,557,218, which is a continuation-in-part of Ser. No. 499,064, Oct. 20, 1965, abandoned. This application Oct. 16, 1971, Ser. No. 81,609

Int. Cl. C07c *131/00*

U.S. Cl. 260—566 A **2 Claims**

Photochromic 1,3,6,8-tetra (lower) alkyl-15,16-dimethyl-15, 16-dihydropyrenes, substituted in one or both of the 2- and 7-position by benzoyl, alkanoyl, alkanoyloxy, cyano, nitro, alkyl, α-hydroxyalkyl, α-acyloxyalkyl, α-isonitrosoalkyl, or acylamido groups are prepared via substitution of the parent hydrocarbon. A typical embodiment is 2-isonitrosomethyl-1,3,6,8,15,16-hexamethyl-15,16-dihydropyrene.

3,719,710

PREPARATION OF HYDRAZINOADAMANTANE COMPOUNDS

Telfer L. Thomas, Pittsford, and Bola Vithal Shetty, Rochester, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Sept. 20, 1968, Ser. No. 761,280

Int. Cl. C07c *109/02*

U.S. Cl. 260—563 P **9 Claims**

The preparation of hydrazinoadamantane compounds utilizing the starting materials of a haloadamantane compound with anhydrous hydrazine which are refluxed together at a temperature in the range of 25°-125° C. under a stream of nitrogen for a time in the range of 1–24 hours, the formed hydrazinoadamantane is treated with potassium hydroxide solution followed by extraction with ethyl ether and dried. Dry hydrogen chloride is passed into the ether solution and the resulting hydrochloride is filtered off and dried.

3,719,711

OLIGOMERIC QUATERNARY AMMONIUM ANTIBACTERIAL AGENTS

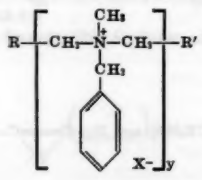
Robert D. Temple, North College Hill, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 19, 1970, Ser. No. 82,067

Int. Cl. C07c *87/30*

U.S. Cl. 260—567.6 P **3 Claims**

Quaternary ammonium compounds of the general formula



wherein R and R′ are the same and are selected from the group consisting of R″OCH2CH(OH)— and R″CH(OH)— wherein R″ is an n-alkyl group of from about four to about 20 carbon atoms, X is a halide ion, and y has a value of frm about 2 to about 4 possess significantly greater antibacterial activity than the corresponding monomers, i.e., when y has a value of 1 and there is no R′ group.

3,719,712

2-PHENYLETHYNYL-BENZYL-AMINES

David C. Remy, North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Sept. 29, 1969, Ser. No. 861,987
Int. Cl. C07c *87/28*
U.S. Cl. 260—570.9 5 Claims

This application discloses methods of preparing styrylaralkylamines and phenylethynylaralkyl-amines by the lithium aluminum hydride reduction of the corresponding cyanostilbenes and phenylethynyl-benzonitriles. The produced alkylamines are converted to the corresponding N-alkyl and N,N-dialkyl derivatives thereof. The amines and their alkylated derivatives are useful as antiarrhythmics.

3,719,713

FLUORINATED β-PHENYL-α-METHYLETHYL-AMINES

Bryan B. Molloy and Ray W. Fuller, Indianapolis, and Kenneth L. Hauser, Greencastle, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed July 14, 1971, Ser. No. 162,621
Int. Cl. C07c *87/28*
U.S. Cl. 260—570.5 R 4 Claims

β-fluoro-β-phenyl-α-methylethylamines useful as sympathomimetic amines with diminished central effects.

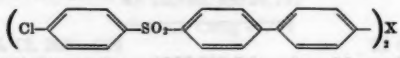
3,719,714

AROMATIC SULPHONES AND POLYMERS PRODUCED THEREFROM

Victor Jeffrey Leslie, Potters Bar, and John Brewster Rose, Letchworth, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 21, 1971, Ser. No. 145,895
Claims priority, application Great Britain, June 3, 1970, 26,837/70
Int. Cl. C07c *147/06*
U.S. Cl. 260—607 A 3 Claims

Novel compounds of the formula



in which X may be —SO_2—, —SO_2—Ar—SO_2, —SO—, —CO— or —CO—Ar—CO, are valuable starting materials for preparing polysulphones containing biphenyl residues in the polymer chain.

3,719,715

DIPHENYLOLPROPANE PRILLS

Johan W. Hoogendonk, Geleen, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands

Division of Ser. No. 684,934, Nov. 22, 1967, Pat. No. 3,518,329. This application Jan. 8, 1970, Ser. No. 7,313
Int. Cl. C07c *39/16*
U.S. Cl. 260—619 A 1 Claim

An improved solid form of diphenylolpropane is disclosed consisting of substantially dust-free, strong prillshaving reduced electrostatic characteristics and improved free flowing characteristics.

3,719,716

PROCESS OF MAKING DIFLUOROCHLORO-BROMOMETHANE

Heinrich Pauckstch, Langenhagen, and Joachim Massonne, Hannover, Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

No Drawing. Filed Sept. 4, 1970, Ser. No. 69,953
Claims priority, application Germany, Sept. 13, 1969, P 19 16 509.1
Int. Cl. C07c *17/10, 17/20*
U.S. Cl. 260—653 2 Claims

Difluoromonochloromethane is reacted with an excess of bromine at a temperature between 300 and 600° C. and the difluorochlorobromomethane is then recovered after removing the unreacted bromine and the formed hydrogen bromide. The recovery is effected by fractional distillation. In this process difluorodibromomethane is an undesirable by-product. This by-product is reconverted to difluorochlorobromomethane by reacting it with chlorine at a temperature in excess of 200° C. The reaction can be effected in a separate reaction vessel or by passing the difluorodibromomethane back into the main reaction mixture together with an added amount of chlorine. Chlorination is effected at temperatures between 300 and 600° C. during a reaction time between about 0.5 and 10 seconds with specific adjustments of the molar ratio of the difluorodibromomethane to chlorine.

3,719,717

PROCESS FOR THE PRODUCTION OF AROMATIC DINITROHALOGEN COMPOUNDS

Johannes Blahak, Cologne, Germany, and Walter Meckel, Martinsville, United States Of America, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 5, 1971, Ser. No. 104,144
Claims priority, application Germany, Jan. 15, 1970, P 20 01 570.7
Int. Cl. C07c *79/12, 139/00*
U.S. Cl. 260—646 12 Claims

Aromatic dinitrohalogen compounds are prepared by reacting aromatic dinitrohydroxy compounds with an acid halide such as phosgene in the presence of an acylated secondary amine as a catalyst at a temperature of from about 50° to 200°C.

3,719,718

PROCESS FOR THE PRODUCTION OF CYCLOPENTADIENE FROM DICYCLOPENTADIENE

Fritz Grude; Kurt Halcour, both of Leverkusen; Wulf Schwerdtel, Cologne; Wolfgang Swodenk, Odenthal-Globusch, and Peter Woernle, Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed April 20, 1971, Ser. No. 135,694
Claims priority, application Germany, April 23, 1970, P 20 19 596.4
Int. Cl. C07c *13/14*
U.S. Cl. 260—666 A 8 Claims

The process for the production of cyclopentadiene by the substantially quantitative splitting or monomerizing of a dicyclopentadiene concentrate containing thermally stable dimers of isoprene and codimers of cyclopentadiene, isoprene and piperylene and having been obtained by the heat treatment of a C_5 fraction of a pyrolysis petrol and its subsequent enrichment by fractional distillation, comprising heating the dicyclopentadiene concentrate in liquid phase in a reactor at a temperature of about 170° to 250° C., and maintaining a concentration of about 10 to 70 percent by weight for the thermally stable dimers of isoprene and codimers of cyclopentadiene, isoprene and piperylene in the reactor.

3,719,719

SELECTIVE HYDROGENATION OF POLYCYCLIC AROMATIC HYDROCARBONS USING AS CATALYST A SULFIDE OF A PLATINUM GROUP METAL

Roger W. Amidon, New Haven, and Harold Greenfield, Litchfield, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Dec. 14, 1970, Ser. No. 98,165
Int. Cl. C07c *5/10*
U.S. Cl. 260—667 14 Claims

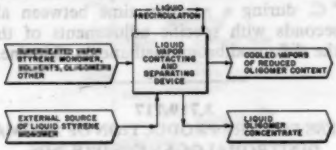
Polycyclic aromatic hydrocarbons are selectively hydrogenated using a sulfide of a platinum group metal as a catalyst. For example, naphthalene is partially reduced to tetralin by hydrogenation in the presence of platinum sulfide.

3,719,720

REMOVING OLIGOMERS FROM STYRENE VAPOR

Wallace G. Bir, Creve Coeur, and Louis C. Tsang, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 16, 1971, Ser. No. 172,188
Int. Cl. C07c *15/10*
U.S. Cl. 260—669 A 5 Claims


LIQUID RECIRCULATION
SUPERHEATED VAPOR STYRENE MONOMER, SOLVENTS, OLIGOMERS OTHER
LIQUID VAPOR CONTACTING AND SEPARATING DEVICE
COOLED VAPORS OF REDUCED OLIGOMER CONTENT
EXTERNAL SOURCE OF LIQUID STYRENE MONOMER
LIQUID OLIGOMER CONCENTRATE

Process for reducing the concentration of styrene oligomers in a super-heated vapor stream composed of styrene monomer, organic solvent, styrene oligomers, and miscellaneous hydrocarbons normally present as low level impurities in commercial grade styrene monomer. The process involves contacting such a vapor feed with a liquid phase composed generally of the same ingredients and continuously separating the resulting liquid and vapor phase and withdrawing a stream of the liquid which becomes rich in oligomers.

3,719,721

DEHYDROGENATIVE PROCESS AND CATALYST

Rowland C. Hansford, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 844,653, July 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 661,777, Aug. 21, 1967, Pat. No. 3,480,684. This application Feb. 26, 1971, Ser. No. 119,354. The portion of the term of this patent subsequent to Nov. 25, 1986, has been disclaimed.
Int. Cl. C07c *5/27*
U.S. Cl. 260—673.5 R 20 Claims

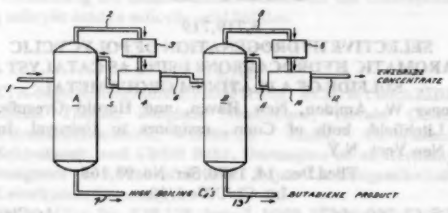
Hydrocarbons are dehydrogenated to olefins and/or dehydrocyclized to aromatic hydrocarbons at elevated temperatures in the presence of a catalyst comprising an intimate association of alumina and chromium oxide upon which is deposited a minor proportion of a promoter selected from the oxides of niobium and tantalum. The catalyst preferably also contains a minor porportion of an alkali and/or alkaline earth metal oxide.

3,719,722

PURIFICATION OF UNSATURATED PRODUCT

Lloyd D. Tschopp, Humble, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Sept. 30, 1970, Ser. No. 76,751
Int. Cl. C07c *11/16, 7/04*
U.S. Cl. 260—680 D 5 Claims



Methyl Chloride and vinyl chloride can be essentially eliminated from a butadiene stream derived from an oxidative dehydrogenation of n-butenes in the presence of chlorine by first separating the butadiene from the higher boiling C_4's and concentrating the methyl chloride and vinyl chloride in the butadiene fraction by fractionation then fractionating the butadiene fraction to produce a concentrate of methyl chloride and vinyl chloride as an overhead and producing a butadiene product essentially free of chlorides. The loss in butadiene based on the initial feed to this purification is less than 0.15 percent volume. The use of chlorine in the oxidative dehydrogenation which necessitates the purification produces 5 to 15 mole percent absolute more butadiene than the same process in the absence of chlorine thus justifying the purification.

3,719,723

EPOXY RESIN-SILOXANE PAINT

John D. Nordstrom, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 777,551, Nov. 18, 1968, Pat. No. 3,577,263. This application Dec. 17, 1970, Ser. No. 99,245
Int. Cl. C08f *35/02*
U.S. Cl. 260—827 15 Claims

A radiation-curable paint is provided by mixing about 80 parts by weight of an alpha-beta olefinically unsaturated resin and about 80 to about 20 parts by weight of an alpha-beta olefinically unsaturated siloxane. The resin is the reaction product of a diepoxide and acrylic or methacrylic acid. The reaction is a conventional epoxy-carboxy reaction. The unsaturated siloxane is the reaction product of at least two molar parts of a monomeric, monohydroxy ester of an alpha-beta olefinically unsaturated monocarboxylic acid, e.g. acrylates, methacrylates, crotonates, cinnamates, with one molar part of a siloxane wherein at least two silicon atoms have one valence satisfied by a hydroxyl group or an alkoxy group. The reaction is a conventional condensation reaction. Vinyl monomers may also be included in the paint dispersion.

3,719,724

RAPID CURING RESIN COMPOSITIONS COMPRISING A MODIFIED ALDEHYDE CONDENSATION POLYMER COREACTED WITH AN EPOXIDE-ALDEHYDE MIXTURE

Harlan G. Freeman, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

No Drawing. Continuation-in-part of application Ser. No. 821,999, May 5, 1969. This application Mar. 29, 1971, Ser. No. 129,240
Int. Cl. C08g *37/38, 45/08, 45/10*
U.S. Cl. 260—828 22 Claims

This invention describes reaction products having particular utility as low temperature rapid curing adhesives for wood and other materials, and processes for making the adhesive compositions. The reaction products are made by reacting (1) an aldehyde condensation polymer having reactive alkylol groups such as a phenol-formaldehyde polymer, with (2) amines such as primary aromatic amines, bis(aminoaryl) compounds, primary aminonaphthalenes, and certain heterocyclic nitrogen-containing compounds, to obtain an amine-modified polymer. On blending a curing agent comprising an epoxide-aldehyde mixture with the amine-modified polymers the resulting resin compositions cure very rapidly at ambient temperature to form insoluble, infusible polymers. When pieces of wood are spread with the preferred adhesives employing the resins of this invention and brought into contact with another wood surface the bond strength develops within minutes. The durability, strength and flexibility of the cured adhesives of this invention under adverse weathering conditions are excellent.

3,719,725

RESINOUS COMPOSITION CONTAINING POLYESTER-EPOXIDE RESIN ADDUCT AND ETHERIFIED AMINALDEHYDE RESIN

Yoichi Murakami, and Hikaru Watanabe, both of Amagasaki-shi, Japan, assignors to Dainippon Ink and Chemicals, Incorporated, Tokyo, Japan

Filed Jan. 19, 1971, Ser. No. 107,857
Claims priority, application Japan, Jan. 22, 1970, 45/5436
Int. Cl. C08g *45/10, 45/14*
U.S. Cl. 260—834 2 Claims

A resin composition suitable for use as paints is prepared by blending a polyfunctional high-molecular-weight linear polyester having a number average molecular weight of at least about 6,000 with an amino resin generally known as aminoplast or a polyisocyanate such as aliphatic or aromatic diisocyanate. The polyfunctional polyester is obtained by reacting a linear polyester having a number average molecular weight of about 1,000 to about 8,000 and a ratio of the terminal carboxyl group to the terminal hydroxyl group of at least 1 with a diepoxide at the epoxy group to the terminal carboxyl group ratio of from 0.5 to 2. The composition can give a baked film having excellent hardness, adhesion, chemical resistance, soiling resistance, and impact resistance.

3,719,726

URETHANE ELASTOMER COMBINED WITH COPOLYMER OF UNSATURATED CARBOXYLIC ACID ESTER AND IONICALLY CROSS-LINKED UNSATURATED CARBOXYLIC ACID

Kazuo Hara and Toshihiko Yoshitake, Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

No Drawing. Filed Mar. 18, 1971, Ser. No. 125,818
Claims priority, application Japan, Mar. 27, 1970, 45/26,186, 45/26,187
Int. Cl. C08g *41/04*
U.S. Cl. 260—859 22 Claims

A polymer composition comprising an intimate mixture of (1) 10 to 90 weight percent of a polyurethane elastomer in which the soft segment is polyethylene glycol or a polyethylene glycol polymer; and (2) 90 to 10 weight percent of a vinylic copolymer consisting of an α,β-unsaturated carboxylic acid and an α,β-unsaturated carboxylic acid ester, the carboxyl groups of said vinylic copolymer being ionically cross-linked by at least one metal of Group I, Group II or Group III of the Periodic Table. Such polymeric compositions have excellent hygroscopic, moisture permeability and mechanical properties and are suitable for manufacturing imitation leathers especially for use as shoe uppers.

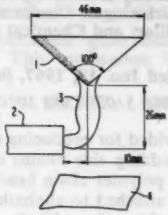
3,719,727

FIREPROOF, THERMOPLASTIC POLYESTER-POLYARYL PHOSPHONATE COMPOSITION

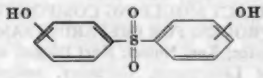
Yukito Masai, Otsu-shi; Yasuo Kato, Shiga-gun, and Nobuhiko Fukui, Otsu-shi, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha (Toyo Spinning Co., Ltd.), Kita-ku, Osaka-shi, Osaka-fu, Japan

Filed March 18, 1971, Ser. No. 125,709
Claims priority, application Japan, March 19, 1970, 45/23910
Int. Cl. C08g *39/10, 51/54*
U.S. Cl. 260—860 13 Claims

A fireproof, thermoplastic polyester composition which comprises a polyester and a polyaryl phosphonate incorporated therein in an amount of 0.4 to 4.0 weight percent as phosphorus to the polyester, the said polyaryl phosphonate



being not less than 6 in the degree of polymerization and containing as its diol component a sulfone compound of the formula:



wherein the benzene ring(s) may bear one or more lower alkyl groups with or without any other diol compound.

3,719,728

RADIATION CURABLE COMPOSITIONS

Thomas J. Miranda, Granger, Ind., assignor to The O'Brien Corporation, South Bend, Ind.

Continuation-in-part of Ser. No. 654,391, July 19, 1967, abandoned. This application Feb. 12, 1970, Ser. No. 11,026
Int. Cl. C08f *11/02, 21/00*
U.S. Cl. 260—861 9 Claims

Radiation curable compositions are made from polymer precursors which are reaction products of aliphatic polycarboxylic acids and monoepoxide compounds containing at least one vinyl group. The precursors, which have molecular weights up to 1000, may be diluted with polymerizable solvents such as styrene to produce radiation curable coating compositions which are essentially 100 percent convertable.

3,719,729

ORIENTED POLYPROPYLENE RESIN MODIFIED POLYTHYLENE POLYETHYLENE TEREPHTHALATE FILMS WITH IMPROVED ELECTRICAL PROPERTIES

Rene Le Paranthoen, St-Maurice de Beynost, and Georges Bonjour, Lyon-Bron, both of France, assignors to La Cellophane, Paris, France

Continuation-in-part of Ser. No. 743,627, July 10, 1968, abandoned. This application May 5, 1970, Ser. No. 34,858
Claims priority, application France, Aug. 8, 1967, 67117168; Dec. 24, 1969, 6944797
Int. Cl. B29g *7/00*; C08g *39/10*
U.S. Cl. 260—87.3 2 Claims

Oriented films of polyethylene terephthalate of improved physical characteristics are prepared by introducing into the polyethylene terephthalate during the polycondensation thereof or immediately prior to the extrusion thereof from 0.01 percent to 1 percent by weight of a polypropylene resin. The oriented film of improved physical characteristics is prepared by subsequent monoaxial or biaxial stretching of the extruded film containing the polypropylene resin.

3,719,730

MODIFICATION OF ALFIN POLYMERS AND PRODUCT

Virgil L. Hansley, Harry Greenberg, Fred Keith Morgan, and Lowell D. Grinninger, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Filed Jan. 18, 1967, Ser. No. 609,998

Int. Cl. C08d 5/02; C08f 19/08, 27/10

U.S. Cl. 260—877 22 Claims

A process is provided for producing modified and graft alfin polymers by adding side chains or groups at reactive sites along the polymer chain bearing active residual alkali metal atoms attached to aliphatic carbon atoms. A compound capable of reacting with the alkali metal atoms is reacted therewith, and a substituent derived from the reactive compound is thereby attached to the polymer chain. There is also provided a branched chain alfin polymer having a plurality of randomly distributed graft branches attached to chain carbon atoms in the molecule, in an amount of one for from about each 1,000 to about 100,000 molecular weight units of a polymer.

3,719,731

HIGH-IMPACT MOULDING COMPOSITIONS AND PROCESS FOR PREPARING SAME

Herbert Schuster; Karl Nutzel; Karl Dinges, and Karl-Heinz Ott, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft

Filed July 29, 1970, Ser. No. 59,349

Claims priority, application Germany, Aug. 6, 1969, P 19 39 894.8

Int. Cl. C08f 1/04, 19/00

U.S. Cl. 260—878 R 12 Claims

A process for the production of high-impact moulding compositions by the bulk polymerization, bulk-suspension polymerization or suspension polymerization of olefinically unsaturated monomers in the presence of a rubber component and a catalyst, wherein the rubber component comprises

A a block copolymer of

a. 99 to 1 percent by weight of blocks of ethylene-propylene copolymer or ethylene-propylene terpolymer rubber, and

b. 1 to 99 percent by weight of blocks of a diene rubber or polypentenamer rubber,

and the olefinically unsaturated monomers comprise

B. a mixture of

a. 90 to 50 percent by weight of styrene, an α-alkyl styrene, a nuclear-alkylated styrene, methyl methacrylate or a mixture thereof, and

b. 10 to 50 percent by weight of acrylonitrile, methacrylonitrile, methyl methacrylate or a mixture thereof, said rubber component comprising from 1 to 20 percent by weight of said moulding composition and said olefinically unsaturated monomers comprising from 99 to 80 percent by weight thereof.

3,719,732

METHOD FOR PRODUCING ALUMINUM ALLOY SHAPED PARTICLES AND ACTIVE RANEY CATALYSTS THEREFROM

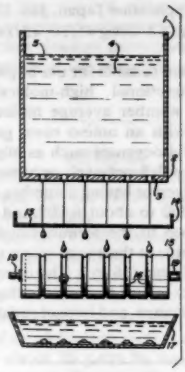
Richard A. Diffenbach, Columbia, and Thomas H. Cheavens, Glenwood, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Dec. 17, 1970, Ser. No. 99,014

Int. Cl. B01j 2/18

U.S. Cl. 264—9 23 Claims

This invention comprises methods for producing shaped aluminum alloy particles. These particles can range from 1–99 percent aluminum, although for subsequent use as active metal catalysts, the concentration ranges from 50 to 90 percent aluminum and 10 to 50 percent of nickel, cobalt, copper or iron. These shaped particles are produced by a melt drop technique whereby individual drops of alloy are dropped into a water bath or onto a cold flat plate. In one preferred embodiment, a steady stream is segmentally cut by a vibrating wire or screen to produce drops prior to contacting the water bath or plate.



3,719,733

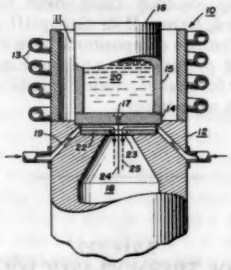
METHOD FOR PRODUCING SPHERICAL PARTICLES HAVING A NARROW SIZE DISTRIBUTION

Lawrence F. Rakestraw, Raleigh, and John W. Mottern, Cary, both of N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 3, 1970, Ser. No. 94,712

Int. Cl. B01j 2/04

U.S. Cl. 264—9 4 Claims



A method is provided for producing small diameter spherical particles in a narrow size distribution from low viscosity melts. Inert gas is constrained to uniformly envelope and move co-currently with a free stream extruded from the melt. The stream attenuates in diameter and disintegrates into spherical-like droplets under the influence of surface tension. The droplets quickly solidify into small diameter spherical particles having a narrow size distribution.

3,719,734

METHOD FOR PRODUCING POLYURETHANE FOAM BLOCKS WHICH HAVE FLAT UPPER SURFACES

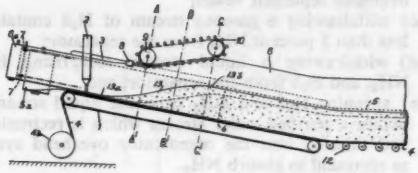
Nicholas G. Petzetakis, Athens, Greece, assignor to Unifoam A.G., Glarus, Switzerland

Continuation-in-part of application Ser. No. 738,962, June 21, 1968, which is a continuation-in-part of application Ser. No. 591,550, Nov. 2, 1966. This application Oct. 17, 1969, Ser. No. 867,218

Claims priority, application Greece, Nov. 12, 1965, 31,732; July 1, 1967, 35,300

Int. Cl. B29d *27/00*

U.S. Cl. 264—51 5 Claims



A process and apparatus for producing polymeric foam blocks (known as "buns") with a substantially flat upper surface. A mixture of, e.g. polyurethane, foam-forming reactants is moved along a trough-shaped conveyor where the reactants are confined during foaming by side and bottom surfaces moving with the expanded foam material. The side surfaces of the conveyor include thin flexible lining material which moves downstream with the expanding foam material and is simultaneously moved upwardly in the foaming region along with the rising surface of the foam material so as to maintain the side margins of the upper surface of the foam at substantially the same height as the central portion of the upper surface of the foam. The downstream and upward movement of the lining material is effected by mechanism which is adjustable to compensate for variations in the location and rate of expansion of the foam so as to ensure that the upper surface of the foam is maintained flat.

3,719,735

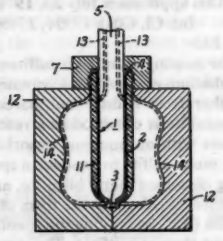
METHOD FOR MOLDING PLASTIC CONTAINERS

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Filed Dec. 21, 1970, Ser. No. 100,050

Int. Cl. B29c *9/00, 17/04, 17/07;* B29d *3/02*

U.S. Cl. 264—89 16 Claims



Method for pressure molding a parison to be subsequently blow molded. A relatively thin sleeve of plastic corresponding to the shape of the blow core is placed over the blow core prior to molding the parison therearound to insulate the blow core from the temperature of the molten plastic to protect the blow valve from clogging and the blow core from erosion by the plastic during the molding step.

3,719,736

METHOD OF PRODUCING PERFORATED PLASTIC FILM

George M. Woodruff, Farmington, Conn., assignor to General Foods Corporation, White Plains, N.Y.

Continuation of abandoned application Ser. No. 795,271, Jan. 30, 1969. This application Oct. 8, 1970, Ser. No. 79,330

Int. Cl. B28b *1/48*

U.S. Cl. 264—156 3 Claims

A new method of perforating plastic films has been discovered which results in a perforated film having about 2000 holes per square inch which can be effectively utilized as a filtration medium. The perforated film is prepared by piercing the plastic material with heated pins and maintaining the temperature of the pins above the melting point of the plastic for a sufficient period of time to cause the flap material to form a reinforced ring around the holes. The result is a perforated film which retains most of its original strength and is free of ragged edges or flaps.

3,719,737

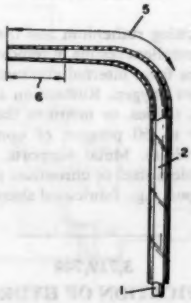
METHOD OF MAKING A PREFORMED CURVED EPIDURAL CATHETER

Vincent L. Vaillancourt, Livingston, and Thomas H. Bohner, Berkely Heights, both of N.J., assignors to C. R. Bard Inc., Murray Hill, N.J.

Continuation of Ser. No. 822,677, May 7, 1969, abandoned. This application Dec. 9, 1970, Ser. No. 96,593

Int. Cl. B28b *11/10;* B29c *17/02*

U.S. Cl. 264—162 5 Claims



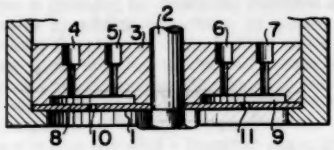
A length of polytetrafluoroethylene tubing is passed over a rigid curved mandrel and then heated to a temperature above approximately 620°F to cause the tubing to become clear. The tubing is rapidly cooled to cause the tubing to set in a curved shape. The tubing is then removed from the mandrel and permitted to stabilize. A portion of the tubing adjacent an end is then stretched and the end of the stretched portion trimmed to form a curved catheter.

3,719,738

METHOD FOR PRODUCING COMPOSITE FIBERS OF ACRYLONITRILE TYPE

Makoto Fujii, Fujishi, Japan, assignor to Ash Kasei Kogyo Kabushiki Kaisha, Kitaku, Osaka, Japan

Filed April 28, 1969, Ser. No. 819,736
Claims priority, application Japan, May 8, 1968, 43/30246
Int. Cl. B29f *3/10*
U.S. Cl. 264—171 5 Claims



Method for producing composite fibers of acrylonitrile type having excellent properties which comprises mixing a three component copolymer A consisting of acrylonitrile, methyl acrylate or methyl methacrylate and methallyl sulfonic acid, which satisfies specified conditions and a four component copolymer B consisting of acrylonitrile, methyl acrylate or methyl methacrylate, acryl amide and methallyl sulfonic acid, which satisfies specified conditions in such a proportion that the copolymer A occupies 25 to 75 percent by weight in the resultant copolymer mixture C and extruding the copolymer A and the copolymer mixture C from a common spinneret so as to form composite fibers having an eccentric arrangement (side by side or sheath and core arrangement) in the cross section by using a nitric acid type solvent.

ERRATUM

For Class 423—604 see:
Patent No. 3,719,451

3,719,739

METHOD OF PREPARING A CATALYST

Charles E. Thompson, Warren, N.J., assignor to Esso Research and Engineering Company

Filed Jan. 29, 1970, Ser. No. 6,973. The portion of the term of this patent subsequent to Jan. 25, 1989, has been disclaimed.
Int. Cl. B01d *53/34*
U.S. Cl. 423—213 6 Claims

Catalysts comprising ruthenium and iridium on a conductive support give excellent results in removing nitrogen oxides from exhaust gases from internal combustion which contain less than 2 percent oxygen. Ruthenium and iridium can be present as metals, oxides, or mixtures thereof; iridium constitutes about 10 to 60 percent of combined amount of ruthenium and iridium. Metal supports, especially ferrous metal such as stainless steel or chromium steel, are preferred. Conventional shapes, e.g., fabricated sheet metal or screens, can be used.

3,719,740

PURIFICATION OF HYDROGEN

David B. Larimore, Berkeley, and Robert T. Christensen, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Nov. 16, 1970, Ser. No. 89,674
Int. Cl. C01b *17/04*
U.S. Cl. 423—228 5 Claims

The present invention is directed to an improved absorbent regeneration process for use in an overall hydrotreating process. In the overall hydrotreating process hydrogen-rich recycle gas is contacted with an aqueous absorbent to absorb H_2S and NH_3 and the H_2S and NH_3 are stripped from the absorbent in a regenerator vessel and removed together with water vapor as an overhead stream via the overhead line from the top of the regenerator vessel. The improvement which is made in the absorbent regeneration process includes the following steps:

(a) injecting a recirculating water stream into the top of the regenerator vessel or into the overhead line from the top of the regenerator vessel so as to absorb NH_3;
(b) cooling the overhead stream so as to condense H_2O, passing the cooled overhead stream to an overhead separator vessel;
(c) withdrawing a gaseous stream of H_2S containing less than 5 percent NH_3 from the separator;
(d) withdrawing a liquid stream comprising H_2O, NH_3, and H_2S from the separator; and
(e) stripping H_2S and NH_3 from the liquid stream to obtain a purified water stream which is recirculated and injected into the regenerator overhead system as aforesaid to absorb NH_3.

3,719,741

SILICA PIGMENTS AND PREPARATION THEREOF

Oliver W. Burke, Jr., P.O. Box 1266, Pampano Beach, Fla.

Continuation of Ser. No. 698,358, Jan. 16, 1968, abandoned, which is a continuation-in-part of Ser. No. 480,143, Aug. 16, 1965, abandoned. This application Oct. 3, 1969, Ser. No. 864,954
Int. Cl. C01b *33/00*, *33/14*, *33/18*
U.S. Cl. 423—339 7 Claims

Silica pigments are precipitated by the acidulation of aqueous sodium silicate solution with carbon dioxide, and for controlling the characteristics of the silica pigment obtained, as evidence by the physical properties imparted to rubber vulcanizates thereby when used as a rubber reinforcing filler, the silicate solution is maintained at different average temperatures during different stages of such acidulation, which end respectively, with the appearance of a Tyndall effect, the subsequent precipitation of at least 10 percent of the silica, the subsequent precipitation to at least 90 percent of the silica, and the final neutralization and flocking of the precipitate.

3,719,742

PROCESS FOR THE REMOVAL OF SULFUR DIOXIDE FROM A SULFUR DIOXIDE-CONTAINING GAS

Jack D. Terrana, Tampa, and Leo A. Miller, Lakeland, both of Fla., assignors to Wellman-Lord, Inc., Lakeland, Fla.

Continuation-in-part of Ser. No. 773,344, Nov. 4, 1968, abandoned. This application July 23, 1970, Ser. No. 57,824
Int. Cl. C01b *17/04*, *17/60*
U.S. Cl. 423—242 12 Claims

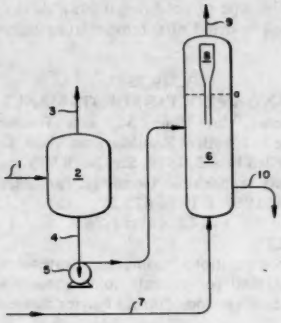
A process for treating metal pyrosulfites such as potassium, cesium, and rubidium pyrosulfites to obtain the corresponding metal sulfide therefrom is disclosed, particularly in a system where the pyrosulfite is obtained as a result of reacting SO_2-containing gases with an aqueous absorbing solution of the corresponding metal sulfite to produce a spent absorbing solution containing dissolved metal bisulfite, and then recovering the metal bisulfite therefrom in the form of the corresponding metal pyrosulfite (e.g., by cooling the spent absorbing solution to crystallize out the pyrosulfite). The process involves heating the pyrosulfite in the presence of a reducing agent such as carbon, carbon monoxide, hydrogen, hydrogen sulfide, or their mixtures to convert the pyrosulfite to the corresponding metal sulfide. The metal sulfide may then be reacted with water and CO_2 to form the corresponding metal carbonate (which can be recycled to the SO_2 absorbing solution) and H_2S. The H_2S from the latter step can be mixed with SO_2 and the mixture subjected to the Claus reaction to produce elemental sulfur and water.

3,719,743

MAGNESIUM CHLORIDE DEHYDRATION

Maurice M. Simon, and Jakob de Swaan Arons, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,242
Claims priority, application Netherlands, March 31, 1970, 7004512
Int. Cl. C01f 5/34
U.S. Cl. 423—498 3 Claims



A two-step process for the dehydration of magnesium chloride is disclosed. In the first step an aqueous slurry of magnesium chloride crystals in from 2 to 4 moles of water per mole of magnesium chloride is formed. In the second step this water is removed in a fluidized bed in the presence of added hydrochloric acid gas.

3,719,744

MANUFACTURE OF SULFUR

Alfred Servasier, Bougival, France, assignor to Societe Nationale des Petroles d'Aquitaine tour d'Aquitaine, Courbevoie, France

Continuation-in-part of Ser. No. 728,296, May 10, 1968, abandoned. This application Dec. 1, 1970, Ser. No. 94,164
Claims priority, application France, May 12, 1967, 67106406
Int. Cl. C01b 17/04
U.S. Cl. 423—574 10 Claims

This invention provides a process which, in the catalytic production of sulfur by reacting hydrogen sulfide and sulfur dioxide, includes the steps of stopping the introduction of air and gas containing hydrogen sulfide into the sulfur producing zones and flushing the catalytic reaction zone with steam, superheated and expanded to a temperature of 300°–500° C., whereby the residual sulfur-containing material is removed from the catalytic reaction zone without reducing the temperature at which the catalysts in the reaction zone are active.

3,719,745

COARSE, LIGHT SODIUM CARBONATE

Walter C. Saeman, Hamden, Conn., assignor to Olin Corporation

Continuation-in-part of application Ser. No. 915, Jan. 6, 1970. This application Oct. 19, 1970, Ser. No. 81,700
The portion of the term of the patent subsequent to Mar. 7, 1989, has been disclaimed
Int. Cl. C01b 7/38
U.S. Cl. 423—421 11 Claims

Coarse, granular, free-flowing low-density sodium carbonate and sodium carbonate-sodium bicarbonate mixtures in the form of substantially hollow beads having an apparent density of 15 to 40 pounds per cubic foot are prepared from a sodium bicarbonate product produced in the form of hollow beads having an apparent density of 20 to 45 pounds per cubic foot. The hollow beads of sodium bicarbonate are produced by hydrating light soda ash (sodium carbonate) to form particles of the desired final size, carbonating in the presence of free moisture to produce a bicarbonate-containing intermediate, volatilizing the liberated moisture and recovering coarse, granular, free-flowing, dust-free, low-density sodium bicarbonate. The hollow beads of sodium bicarbonate on calcination produce hollow beads of sodium carbonate having an apparent density of 15 to 30 pounds per cubic foot. To produce granular sodium carbonate having an apparent density of 25 to 40 pounds per cubic foot, lower density beads are moistened with sodium carbonate solution and re-dried. The calcined sodium carbonate products and carbonate-bicarbonate products have particular utility in detergent compositions.

3,719,746

AQUEOUS SYNTHESIS OF IONICALLY CONDUCTIVE COMPOSITIONS OF MATTER

William V. Johnston, Camarillo, Calif., assignor to North American Rockwell Corporation

Filed Dec. 8, 1970, Ser. No. 96,229
Int. Cl. H01b 1/06; C01b 9/00; C01g 1/06, 3/04, 7/00, 9/04
U.S. Cl. 423—463 9 Claims

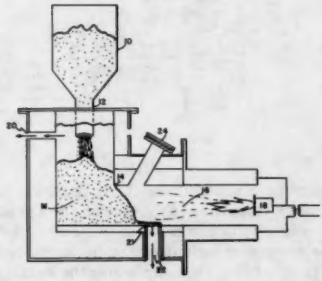
An aqueous process for the preparation of a solid ionically conductive composition of matter having the formula MAg_4I_5 in which M is Rb, K, NH_4, Cs, or a combination of these, Cs being present only as a minor constituent of M, comprising preparing a substantially saturated solution of MI in water, intimately admixing four molar equivalents of AgI with the MI solution to effect reaction between the MI and AgI, and removing the water to recover MAg_4I_5 as the synthesized ionically conductive composition.

3,719,747

HYDROTHERMAL PROCESS FOR MAKING HYDROGEN FLUORIDE

John S. Hayford, Stamford, Conn., assignor to Stauffer Chemical Company, New York, N.Y.

Filed March 4, 1971, Ser. No. 121,087
Int. Cl. C01b 7/22, 33/24
U.S. Cl. 423—485 2 Claims



This invention provides a hydrothermal process for the manufacture of hydrogen fluoride. The process comprises adding a mixture of calcium fluoride and silica to a reaction zone, providing a heat source to supply the necessary water to be reacted with the calcium fluoride silica mixture and to heat the mixture to a temperature of between about 3500° and 5000°F., and recovering the gaseous hydrogen fluoride product.

3,719,748

METHOD FOR CLARIFYING TITANIUM SULPHATE SOLUTIONS

Willy Manfroy, 49 Neudorfstrasse, Horgen, Switzerland, and Kurt Adolf Fleig, 7495 S.W. 105 Terrace, Miami, Fla.

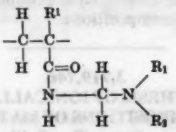
Filed Nov. 2, 1970, Ser. No. 86,337

Claims priority, application Great Britain, Nov. 5, 1969, 54,285/69

Int. Cl. C01g *23/00, 23/04, 49/14*

U.S. Cl. 423—544 14 Claims

A process for the clarification of the black liquor obtained in the acid leaching of titaniferous ores and titanium slag feed, which process comprises adding to the black liquor a water-soluble cationic polymer flocculant containing monomer units having the formula:



wherein R′ is hydrogen or methyl and R_1 and R_2 are alkyl groups, for example methyl or ethyl groups and preferably contain not more than four or five atoms.

3,719,749

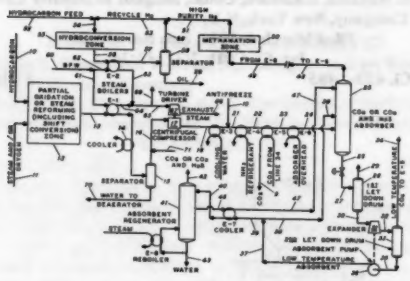
HYDROGEN PRODUCTION

Calvin S. Smith, and William J. McLeod, both of El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 736,520, May 17, 1968, Pat. No. 3,618,331,, which is a continuation-in-part of Ser. No. 665,106, Sept. 1, 1967, abandoned. This application Feb. 16, 1971, Ser. No. 115,554

Int. Cl. C01b *1/02, 1/16, 1/32*

U.S. Cl. 423—650 13 Claims



A process for manufacturing high pressure, high purity hydrogen which comprises (a) generating at a pressure below about 450 psig a hydrogen-rich gas containing sufficient Co_2 so that the molecular weight of the hydrogen-rich gas is at least four; (b) centrifugally compressing the hydrogen-rich gas from a pressure below about 450 psig to a substantially higher pressure above 450 psig to obtain high pressure hydrogen-rich gas; (c) removing CO_2 from the high pressure hydrogen-rich gas to obtain high purity hydrogen, at least part of the CO_2 being removed by absorbing CO_2 in a mixed absorbent comprising a chemical absorbent and a physical absorbent.

ERRATUM

For Class 423—519 see:
Patent No. 3,719,705

3,719,750

RADIOACTIVE PREPARATION ABSORBABLE IN ORGANISM AND METHOD OF OBTAINING SAME

Nikolai Gennadievich Serebryakov, Anatoly Nikolaevich Dedenkov, and Mikhail Akimovich Kiryakov, Obninsk, U.S.S.R., assignors to Institut Meditsinskoi Radiologii Amn SSSR, Obninsk Kalughskoi oblasti, U.S.S.R.

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,047

Int. Cl. A61k *27/04*

U.S. Cl. 424—1 5 Claims

Absorbable radioactive articles for tissue implantation are obtained by mixing methyl hydroxypropyl cellulose with water to form a viscous mixture. The mixture is centrifuged and the centrifugate is then mixed with a solution of a radioisotope of gold or yttrium. A shaped article is formed which is dried at a temperature below 150° C.

3,719,751

PESTICIDE AND A PROCESS FOR ITS MANUFACTURE

Herbert Rauscher, Im Uhug 54, and Werner Schoom, Bergerstrasse 342, both of Frankfurt am Main, Germany

Filed Feb. 5, 1970, Ser. No. 9,073

Claims priority, application Germany, Jan. 22, 1970, P 20 02 655.5; Feb. 8, 1969, P 19 06 413.2

Int. Cl. A01m *1/20*

U.S. Cl. 424—27 7 Claims

Pesticidal compositions comprise water-decomposable compounds, adapted to generate toxic gases upon contact with water, held on a porous, fibrous carrier material.

3,719,752

AEROSOL PACKAGE CONTAINING A HOMOGENEOUS SINGLE PHASE LIQUID SKIN-CONDITIONER

Frederick G. Taylor, Bloomfield, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 509,207, Nov. 22, 1963, abandoned. This application July 27, 1970, Ser. No. 58,671

Int. Cl. A61k *7/00*

U.S. Cl. 424—47 4 Claims

A single phase, liquid skin-conditioning formulation which can be discharged from an aerosol-type container by means of a halogenated alkane propellant is disclosed. The liquid formulation contains a non-soap, surface-active agent and the propellant dissolved in a solvent system comprising water and a lower-alkanol. When expelled from the pressurized container through a suitable nozzle, the composition forms a stable, non-sticky foam.

3,719,753

COCCIDIOSTATS

Julius Berger, Passaic, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 672,729, Oct. 4, 1967. This application Mar. 6, 1969, Ser. No. 804,974

Int. Cl. A61k *21/00*

U.S. Cl. 424—122 4 Claims

Compositions containing the antibiotic having the designation X–537A, useful for the treatment and prevention of coccidiosis in poultry feed compositions containing the antibiotic and methods of treating coccidiosis are disclosed.

3,719,754

PROCESS FOR PRODUCING INTERFERON-INDUCING PARTICLES AND COMPOSITION CONTAINING SAID PARTICLES

Lawrence E. Day and Lee F. Ellis, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed June 30, 1971, Ser. No. 158,587

Int. Cl. C12d *13/00*

U.S. Cl. 424—177 6 Claims

Virus-like particles which are obtained from cephalosporin-producing organisms are active in inducing the production of interferon.

3,719,755

O-ALKYL-S-PHTHALIMIDOMETHYL ALKYLDITHIOPHOSPHONATES AS INSECTICIDES AND MITICIDES

Karoly Szabo, Syracuse, N.Y., and John Gary Brady, Kalamazoo, Mich., assignors to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 585,247, Oct. 10, 1966, Pat. No. 3,457,283, which is a continuation-in-part of Ser. No. 442,792, March 25, 1965, abandoned, which is a continuation-in-part of Ser. No. 265,072, March 14, 1963, abandoned, which is a continuation-in-part of Ser. Nos. 121,836, July 5, 1961, abandoned, and Ser. No. 217,302, Aug. 16, 1962, abandoned. This application March 12, 1969, Ser. No. 813,397

Int. Cl. A01n 9/36

U.S. Cl. 424—200 14 Claims

O-alkyl-S-phthalimidomethyl alkyl dithiophosphonates effective as pesticides in controlling a variety of pest organisms, for example, mites and insects.

3,719,756

COMPOSITIONS FOR INHIBITING ANOMALOUS DEPOSITION AND MOBILIZATION OF CALCIUM PHOSPHATE IN ANIMAL TISSUE

Marion D. Francis, Springfield Township, Hamilton County, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Oct. 30, 1970, Ser. No. 85,803

Int. Cl. A61r 27/00

U.S. Cl. 424—204 6 Claims

Compositions for inhibiting anomalous deposition and mobilization of calcium phosphates in animal tissue, comprising an effective amount of a poly(vinylidenediphosphonate) in a pharmaceutical carrier; and a method for treating conditions involving pathological calcification and hard tissue demineralization in an animal comprising administering to such animal said compositions.

3,719,757

METHOD FOR UTILIZING BISPHOSPHORYLATED IMIDODI-THICARBONATES AS INSECTICIDES OR ARACHNICIDES

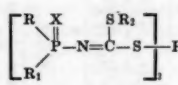
Roger Williams Addor, and David Edgar Ailman, both of Pennington, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 58,676, July 27, 1970. This application May 18, 1972, Ser. No. 254,522

Int. Cl. A01n 9/36, 9/00

U.S. Cl. 424—204 6 Claims

Bis-N-phosphorylated compounds represented by the structure;



wherein R and R_1 are each members selected from the group consisting of loweralkyl, lower alkoxy, and phenyl; X is sulfur or oxygen; R_2 is loweralkyl, loweralkenyl, benzyl, or halo-substituted benzyl; and R_3 is a lower alkylene radical, such as methylene, ethylene, lowerlakyl-substituted ethylene, trimethylene, loweralkyl-substituted trimethylene, oxydimethylene, tetramethylene, or loweralkyl-substituted tetramethylene. They find utility as insecticides and arachnicides and are highly effective against both the larval and adult stages of insects.

3,719,758

METHOD OF PROMOTING GROWTH AND IMPROVING FEED EFFICIENCY IN POULTRY AND SWINE VIA ORAL ADMINISTRATION OF CEPHALOSPORIN C

Charles E. Jordan, Greenfield, Ind., assignor to Eli Lilly and Company, Indianopolis, Ind.

Filed June 19, 1970, Ser. No. 47,859

Int. Cl. A61k 27/00

U.S. Cl. 424—246 3 Claims

Method of promoting growth and improving feed efficiency in poultry and swine comprising administering orally thereto an effective amount of cephalosporin C [7-(5'-aminoadipamido) cephalosporanic acid], and compositions containing said cephalosporin C.

3,719,759

ANTIPROTOZOAL COMPOSITIONS CONTAINING NITROIMIDAZOLES

Lewis H. Sarett, Princeton, and Dale R. Hoff, Basking Ridge, N.J., and David W. Henry, Menlo Park, Calif., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application Aug. 2, 1966, Ser. No. 569,595, which is a continuation-in-part of application Ser. No. 350,639, Mar. 10, 1964. Divided and this application July 22, 1969, Ser. No. 843,749

Int. Cl. A61k 27/00

U.S. Cl. 424—273 13 Claims

Compositions containing a 1-substituted -2-aryl-5- nitroimidazole, 1-substituted-2-aryl-4-nitroimidazole or a related isoindole or dihydroisoquinoline compound as the active ingredient are prepared. The compositions are utilized as antiprotozoals, antibacterials, anthelmintics and the like.

3,719,760

N-TRITYL-IMIDAZOLIUM SALTS AS A FUNGICIDE

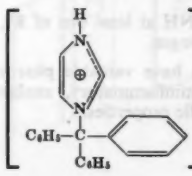
Karl Heinz Buchel, Wuppertal-Elberfeld; Ferdinand Grewe, Leverkusen; Hans Scheinpflug, Leverkusen; Helmut Kaspers, Leverksen, and Erik Regel, Wuppertal-Elberfeld, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 18, 1970, Ser. No. 73,638

Int. Cl. A01n 9/22

U.S. Cl. 424—273 20 Claims

Plant fungicidal compositions are produced which comprise an amount of a compound of the formula:



wherein Y is the anion of an inorganic or organic acid, sufficient to be effective for killing, combatting or controlling plant fungi, in combination with a solid or liquid diluent or carrier. Methods for killing, combatting or controlling fungal diseases in plants comprise applying to the fungi or to the plant to be protected an effective or toxic amount of the above compound.

3,719,761

METHOD OF ENHANCING MEMORY AND LEARNING

Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Jan. 27, 1972, Ser. No. 221,395

Int. Cl. A61k 27/00

U.S. Cl. 424—274 4 Claims

Covers the use of L-prolyl L-leucyl glycine amide in enhancing learning rate and retention levels of warm-blooded animals such as humans.

3,719,762

USE OF ACETOACETYLAMINO DIPHENYL AMINES AS ANTIINFLAMMATORY AGENTS

Kurt Thiele, Frankfurt, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

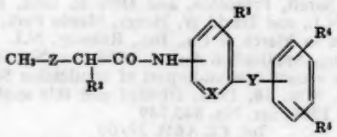
No Drawing. Continuation-in-part of applications Ser. No. 682,616, Nov. 13, 1967, and Ser. No. 840,816, July 10, 1969. This application Aug. 25, 1970, Ser. No. 66,883

Claims priority, application Germany, Nov. 16, 1966, D 51,561; Sept. 1, 1967, D 53,982

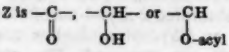
Int. Cl. A61k 27/00

U.S. Cl. 424—324 15 Claims

N-aromatic substituted acid amide compounds of the formula



wherein:

Z is 

wherein

the acyl is the acyl group of a lower aliphatic, preferably, alkyl carboxylic acid or of a monoaliphatic, preferably, alkyl ester of carbonic acid,

R^2 is H or lower alkyl,

R^3 is H, halogen, lower alkyl or lower alkoxy, each of R^4 and R^5 taken individually is hydrogen, halogen, lower alkyl, nitro, trifluoromethyl, lower alkoxy, lower alkyl amino, amino, hydroxy, acyl-oxy as defined above or acyl-amino as defined above,

X is =N— or =CH— and

Y is —CH_2— or —NH—

and wherein when Z is

X is CH and Y is NH at least one of R^2, R^3, R^4 and R^5 is other than hydrogen.

Such compounds have valuable pharmaceutical properties, such as, antiinflammatory, analgesic, antipyretic and/or antispasmodic properties.

3,719,763

BINARY AMINO OVICIDAL COMPOSITION

Richard F. Cline, and Donald P. Wilton, both of Savannah, Ga., assignors to The United States of America as represented by the Secretary of Health, Education and Welfare

Filed Sept. 29, 1969, Ser. No. 862,056

Int. Cl. A01n 9/20

U.S. Cl. 424—325 6 Claims

A binary aqueous spray ovicidal composition useful in controlling *Aedes aegypti* consisting of a minor amount (0.05 to .4 percent) of an apolar amine (e.g., decylamine) and a major amount (1 to 2 percent) of a polar amine (e.g., ethanolamine).

3,719,764

DRUGS DERIVED FROM PYRAZOLONE

Pierre Girault, Paris, and Guy Hagemann, Nogent Sur Marne, both of France, assignors to Roussel Uclof, Paris, France

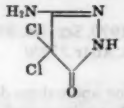
Filed July 27, 1971, Ser. No. 166,564

Claims priority, application France, Aug. 14, 1970, 7030026

Int. Cl. A61k 27/00

U.S. Cl. 424—273 2 Claims

According to the invention the 3-amino-4,4 dichloro pyrazolone of formula I



I

and its salts with a therapeutically compatible mineral or organic acid are pharmaceutically useful compounds. They are endowed with interesting antibacterial and antifungic properties.

3,719,765

SUBSTITUTED TRIMESONITRILES FOR REGULATING PESTS ON PLANTS

Robert D. Battershell, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Division of Ser. No. 772,052, Oct. 30, 1968, Pat. No. 3,637,796. This application Aug. 17, 1970, Ser. No. 64,587

Int. Cl. A01n 9/20

U.S. Cl. 424—304 4 Claims

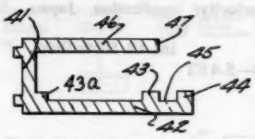
Substituted trimesonitriles are disclosed along with their preparation through reaction of chlorinated trimesonitrile with aniline and substituted anilines. The compounds disclosed herein are active as pesticides including fungicidal, viricidal and bactericidal applications.

ELECTRICAL

3,719,766
WALL EASEL

Dieter Fichtel, Muskegon, Mich., assignor to American Store Equipment Corporation, Muskegon, Mich.

Filed Sept. 10, 1971, Ser. No. 179,456
Int. Cl. A47b *97/04*
U.S. Cl. 35—63 19 Claims

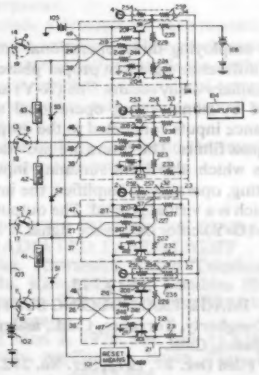


The easel frame includes extruded elements of C-shaped cross section, having spaced legs joined by a web. One leg is longer than the other and includes a longitudinal channel for receiving and anchoring a chalk board or other panel which abuts the end of the other leg. The other leg provides a chalk tray mounting surface. A wall mounting bracket includes a support post extending up from the lower leg which fits in a socket recess on the lower easel frame member for pivotally supporting the easel about the post. A self-lubricating bushing is inserted in the socket and includes an indexing stop portion engageable with the lower frame element to index the bushing within the socket and prevent relative rotation between the bushing and easel frame. An alternative arrangement provides a pair of easels mounted for rotation relative to each other. A channel lock slips over the upper portions of each frame for locking the frames in a fixed relationship to each other. An alternative mounting bracket includes magnetic means securing the easel to the wall.

3,719,767
SIGNAL-SELECTING SYSTEM FOR A KEYBOARD TYPE ELECTRONIC MUSICAL INSTRUMENT

Kenji Matumoto, Nara, Masuo Omura, Hirakata, and Masahiko Tsunoo, Suita, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 9, 1971, Ser. No. 196,894
Claims priority, application Japan, Nov. 29, 1970, 45/105,349
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.01 11 Claims

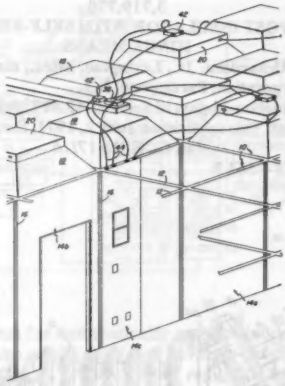


A signal-selecting system for a keyboard type electronic musical instrument which has a plurality of generators generating tone signals having frequencies corresponding to the notes of the musical scale. The signal-selecting system has a plurality of keyswitches each having a movable-contact and a make-contact, and a plurality of memory means each having a set terminal, a reset terminal, a common reset terminal and an output terminal. The set terminal is coupled to a corresponding one of the keyswitches. A plurality of gate means is provided, one being coupled between each memory means and a corresponding tone generator so as to produce a selected output tone signal. A reset means is coupled between the output terminals and the common reset terminals. An electric power source is connected through a common line to the keyswitches. A plurality of reset elements is provided, one being connected between each of the keyswitches and the reset terminal of the memory means next adjacent to the memory means corresponding to said each of said keyswitches, and a plurality of diodes are provided which are connected in series, and each diode is also connected between reset terminals of two adjacent memory means.

3,719,768
CONSTRUCTION PANEL

Nils G. Jonsson, Woburn, Mass., assignor to American Modular Systems Designs, Inc., Cambridge, Mass.

Filed May 27, 1971, Ser. No. 147,458
Int. Cl. H02g *3/28*
U.S. Cl. 174—49 5 Claims



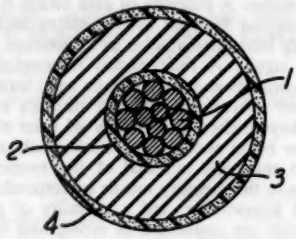
A flexible, versatile building system including movable wall panels has a portion of an electrical system as an integral part of the panel. The panels may be rearranged easily to provide a variety of wall and floor plan configurations adapted to suit a particular purpose. The portion of the electrical system which is integral with the panel is connected to one or more main electrical distribution systems by special easily disconnectable connectors which are formed permanently as an integral part of the panel at the upper marginal edge of the panel. The electrical distribution system is disposed above and map rest on the ceiling and includes flexible, easily accessible cords which may be reconnected to the panel after the panel has been moved to a new location. The system avoids conventional concepts of permanent wiring. The connectors integral with the panels are of special design to preclude inadvertent mismatching of connectors when the electrical system in the building includes a number of distinct circuits for different purposes such as lighting controls, communications etc.

3,719,769

INSULATED ELECTRIC CABLE HAVING AN EXTERNAL SEMICONDUCTIVE LAYER

Hirokazu Miyauchi, and Hironaga Matsubara, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 5, 1970, Ser. No. 77,918
Int. Cl. H01b 9/02
U.S. Cl. 174—120 SC 7 Claims



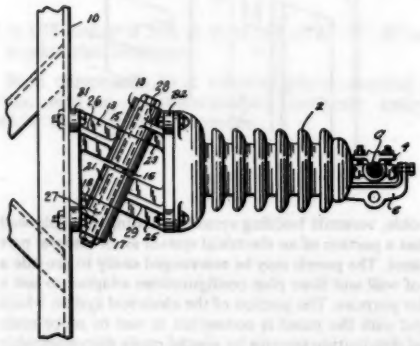
An insulated electric cable having an external semiconductive layer with easy stripping qualities for termination wherein the cable is insulated primarily with crosslinked polyethylene or a crosslinked polyethylene copolymer and the external semiconductive layer consists of an ethylene vinyl acetate copolymer containing 25–55 wt-percent vinyl acetate and 2,5-dimethyl-2′,5′-di(tertiary butyl/peroxy)-hexine-3 and an inclusion of an electric conductive substance such as carbon black to render the layer semiconductive.

3,719,770

LINE POST INSULATOR WITH SELF-RESTORING HINGE MEANS

Albert S. Richardson, Jr., Lexington, Mass., assignor to Interpace Corporation, Parsippany, N.J.

Continuation-in-part of Ser. No. 43,817, June 5, 1970, abandoned. This application June 2, 1971, Ser. No. 149,318
Int. Cl. H01b 17/16
U.S. Cl. 174—161 R 2 Claims



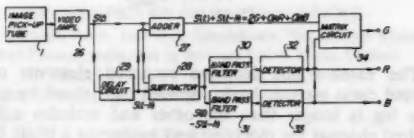
Impact stresses which result from breaking of an electrical transmission line, under a shock load, act to break post insulators which support the line and are secured to supporting poles. The shock load is controlled effectively by supporting proximal ends of the post insulators for pivotal movements through arcuate paths of travel about axes which extend upwardly and outwardly from their respective poles, whereby the shock load is converted into rotary motion and the weight of the line works to dampen the shock load. The pivoting movement is achieved by means of compact, sturdy, inclined hinge assemblies connected between the poles and the proximal ends of their respective post insulators.

3,719,771

STRIPED FILTERS FOR COLOR VIDEO SIGNAL GENERATORS

Yoshizumi Eto, Hachioji, and Masao Hibi, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed March 8, 1971, Ser. No. 121,955
Claims priority, application Japan, March 9, 1970, 45/19286
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 ST 2 Claims



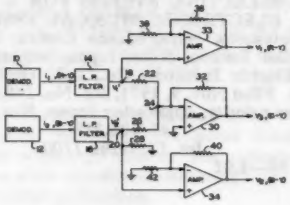
A striped filter structure for color video signal generators comprising a first striped filter consisting of an alternate arrangement of transparent stripes and yellow stripes and a second striped filter consisting of an alternate arrangement of transparent stripes and cyanic stripes, the stripes of the first striped filter being at an angle to the stripes of the second striped filter.

3,719,772

COLOR TELEVISION MATRIXING CIRCUIT

Stephen A. Roth, Beaverton, Oreg., assignor to Tektronex, Inc., Beaverton, Oreg.

Filed March 22, 1971, Ser. No. 126,701
Int. Cl. H04n 9/52
U.S. Cl. 178—5.4 MA 10 Claims



A circuit employing three operational amplifiers provides three color difference signals in proper phase relation without requiring auxiliary delay means. The (R-Y) and (B-Y) outputs are supplied by noninverting operational amplifiers having high impedance inputs connected to the outputs of (R-Y) and (B-Y) low-pass filters. The filters are provided with terminating resistors which also form summing input resistors for a third, inverting, operational amplifier, the inverting input terminal of which is a virtual ground. The output of this third amplifier is the (G-Y) color difference signal.

3,719,773

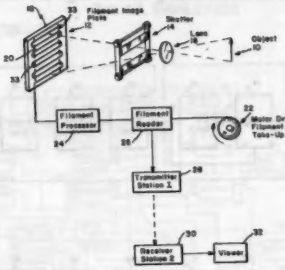
IMAGE TRANSDUCING SYSTEM

Charles B. Dougherty, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 27, 1971, Ser. No. 212,536
Int. Cl. H04n 1/10
U.S. Cl. 178—6 10 Claims

A photographic film is formed by winding a photosensitive filament sinuously on a backing plate. The filament is weakly

adherent to the backing plate. After image exposure, the filament is peeled off the backing plate and drawn lengthwise through a developer and then through a photocell reader to



convert the image to a corresponding electrical signal. The electrical signal is transmitted to another station where it is processed to reconstruct the original image.

3,719,774

VIDEO REPEATER FAULT ALARM SYSTEM

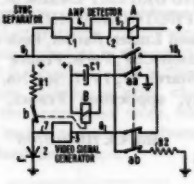
Hans Kraaijenbrink, Gouda, Netherlands, assignor to De Staat der Nederlanden, Ten Deze Verlegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, The Hague, Netherlands

Filed March 12, 1971, Ser. No. 123,657

Claims priority, application Netherlands, March 13, 1970, 7003588

Int. Cl. H04n 7/00

U.S. Cl. 178—6 **5 Claims**



A wideband transfer system comprises a transmitter, a receiver and a plurality of sections therebetween separated by repeaters, which sections are adapted to be selectively enabled by means applying a signal characteristic of a repeater to the input of this repeater.

Said means include a detector for each repeater, which detector determines the amplitude of line synchronization pulses of a video signal, automatically controls the application of the characteristic signal, which is a video signal composed of pulses for line synchronization only, and is adapted to actuate an alarm in the receiver.

The system is particularly suitable in the transfer of video signal across, for instance, a coaxial cable.

3,719,775

IMAGE PICKUP SYSTEM BY LINEARLY RADIATED LASER LIGHT

Takashi Takaoka, Kawasaki, Sadao Takahashi, Tokyo, Takeo Fukuda, Kawasaki, and Teruhisa Hori, Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

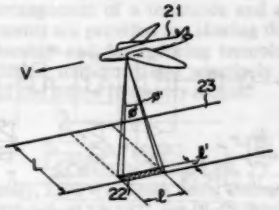
Filed Mar. 2, 1970, Ser. No. 15,810

Claims priority, application Japan, Mar. 1, 1969, 44/15,584

Int. Cl. H04n 5/84

U.S. Cl. 178—6.7 R **13 Claims**

An image pickup system installed in a movable body which transversely scans the image of a foreground object in a direction perpendicular to that in which said body travels, using a pulsed linear laser light beam advancing parallel to said traveling direction, thereby obtaining in said movable body the two-dimensional image of said object and information on the undulations thereof.



3,719,776

APPARATUS FOR PHOTOGRAPHING AN IMAGE OF A SPECIMEN

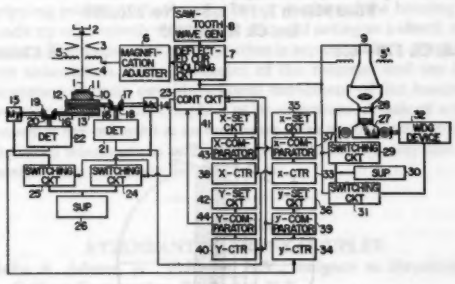
Tatsuo Fujiyasu, Katuta, and Yoshio Ohnuma, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 11, 1970, Ser. No. 62,863

Claims priority, application Japan, Aug. 11, 1969, 44/62,876

Int. Cl. H04n 5/84; H01j 37/26

U.S. Cl. 178—6.7 R **12 Claims**



An apparatus for automatically and continuously photographing an image of a specimen having a control arrangement for scanning a predetermined region of the specimen by means of an electron beam; means for displaying the image of said region of the specimen on a screen of a cathode ray tube synchronized with said scanning; a camera for photographing the image displayed on the screen; and means for shifting the specimen along X and Y axes in accordance with a predetermined sequence.

3,719,777

PROCESS AND APPARATUS FOR CONVERTING IMAGE ELEMENTS TO ELECTRIC IMPULSES

Fernando von Reichenbach, City Bell, Argentina, assignor to Instituto Torcuato di Tella, Capital Federal, Argentina

Filed April 19, 1971, Ser. No. 135,006

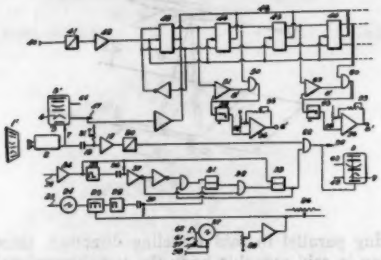
Claims priority, application Argentina, April 17, 1970, 228168

Int. Cl. G06k 9/12, 11/02; H04n 7/18

U.S. Cl. 178—6.8 **2 Claims**

Process and apparatus by which numerical values or image elements represented in graph form on paper or other similar material are converted into electric impulses. In a preliminary

stage, the graphic numerical values can be successively analyzed and modified, readjusting them to the requirements of the case, in relation to the electric impulses they generate. The graphic numerical values are converted into variable electrical voltages in order to program processes controlled by voltage or intensity, but they can also be utilized in the programming of processes controlled by pulses of variable duration or by counting the pulses.



3,719,778

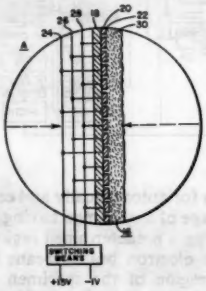
MULTIELECTRODE SIGNAL PLATE STORAGE TUBE FOR STANDARDS CONVERSION OF ELECTRICAL SIGNALS

Martin Green, Big Flats, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 2, 1971, Ser. No. 120,280

Int. Cl. H04n *5/02*

U.S. Cl. 178—6.8 **5 Claims**



An electrical signal conversion system is provided which includes a multielectrode signal plate storage electrode for conversion of electrical signals of a first scan rate into electrical signals of a second scan rate.

3,719,779

HIGH SPEED FREQUENCY SHIFT KEYED TRANSMISSION SYSTEM

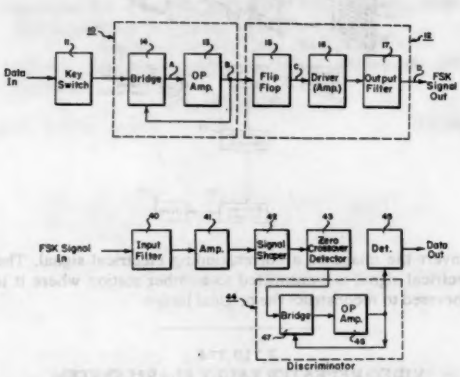
Kenneth A. Wilson, Bridgeport, Conn., assignor to American Chain & Cable Company, Inc., New York, N.Y.

Filed May 22, 1970, Ser. No. 39,712

Int. Cl. H04l *27/10, 27/12, 27/14*

U.S. Cl. 178—66 R **5 Claims**

A frequency shift keyed data transmission system utilizes a transmitter comprising an oscillator for producing a series of output voltage pulses whose repetition rate is governed by the time constant of an associated RC circuit, a key switch for altering the resistance of the associated circuit—thereby altering the pulse repetition rate—and a conversion circuit for converting the pulses into sinusoidal output waves having a frequency proportional to the pulse repetition rate. This transmitter is capable of transmitting data at high bit rates without introducing significant frequency transients. A receiver which utilizes a discriminator comprising circuitry similar to that of the above-described transmitter can be used to detect FSK information in a manner which is substantially independent of variations in the signal amplitude.



3,719,780

RECORDING AND DISPLAY LASER SCANNING SYSTEM USING PHOTOCHROMIC SUBSTRATES

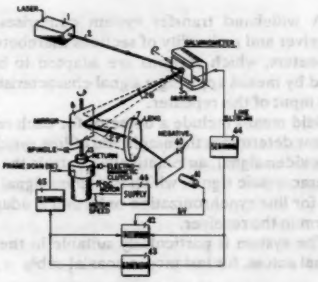
Maryse Gazard, and Lucien Barbet, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed March 17, 1971, Ser. No. 125,287

Claims priority, application France, March 17, 1970, 7009517

Int. Cl. H04n *3/08*

U.S. Cl. 178—7.6 **4 Claims**



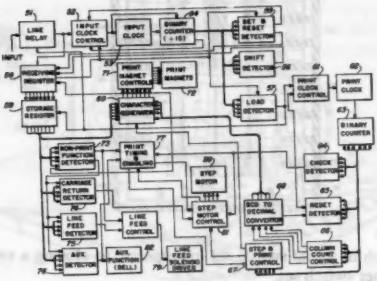
A system is provided for producing high-linearly optical field scanning, which can be synchronized by external electrical systems and enables ready exploitation of photochromic substrates to be effected.

It comprises a laser, a light modulator, a line-scan deflector with a galvanometer mirror, a frame-scan deflector with a flat mirror associated with a disengageable constant speed drive and a device for returning the mirror to the original position, an optical focusing lens, and a circuit producing the video signal SV which is to be displayed, and the line-scan and frame-scan signals SL and SI respectively.

3,719,781
CONTROL SYSTEM FOR HIGH SPEED PRINTER

John R. Fulton, Brookfield, and Walter J. Zenner, Des Plaines, both of Ill., assignors to Extel Corporation, Chicago, Ill.

Filed March 19, 1971, Ser. No. 126,004
Int. Cl. H04l *21/00*
U.S. Cl. 178—30 16 Claims

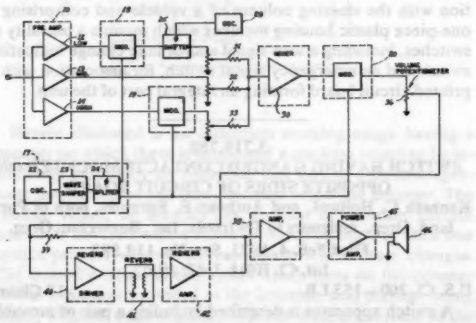


An all-electronic control system for a high-speed dot matrix printer, using a permutation code input signal comprising individual code words each including a fixed number of data pulses preceded by a start pulse. The control system comprises a line relay for receiving the input signal, an input clock triggered by the start pulse in each code word and developing a clock signal at a frequency equal to a predetermined multiple of the input pulse frequency, and an electronic shift register as a buffer store for recording each pulse, in a code word, in sequence as received, on a given count of the clock. The system further comprises an operational store, a load detector for stopping the input clock and transferring recorded data from the buffer store to the operational store whenever the data pulses of a complete code word have been recorded in the buffer store, and operational control means to actuate the printer in accordance with data in the operational store while a further code word is recorded in the buffer store. The operational control means includes a print clock, started upon transfer of data to the operational store, for timing the functions of the printer, including carriage advance or return, print rod actuation, line feed, and others.

3,719,782
SYSTEM FOR CHANGING THE OUTPUT RESPONSE CHARACTERISTICS OF AN ACOUSTIC INPUT

Phillip R. Barnum, Mesa, Ariz., assignor to James E. Breene, Chandler, Ariz.

Filed Oct. 12, 1971, Ser. No. 188,418
Int. Cl. H03h *7/00*; G10h *1/00*
U.S. Cl. 179—1 J 14 Claims

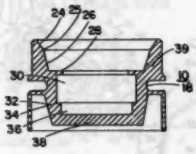


A sound system is disclosed incorporating a frequency divider for dividing a sound signal into predetermined frequency ranges. Each frequency range is selectively subjected to phase shifting and/or amplitude modulation to produce a desired effect. The modulated frequency ranges are recombined in a mixer and the mixed signal is applied to appropriate amplifying and transducing means through a parallel arrangement of a resistance and a reverb system. Adjustments are provided for altering the inter range phase relationship and for inducing tremolo in selected frequency ranges; tremolo is also selectively provided for the combined and mixed frequency ranges.

3,719,783
ACOUSTIC COUPLER

John P. Kennedy, 2198 Woodstock Road, Columbus, Ohio

Filed April 23, 1971, Ser. No. 136,963
Int. Cl. H04m *1/00*
U.S. Cl. 179—1 C 6 Claims

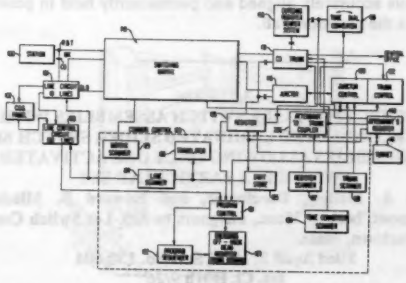


A rubber-like housing for an acoustic coupler adapted to couple a telephone handset to a transducer for data communication. The configuration and material makeup of the housing insures intimate contact with the telephone handset. The upper portion of the housing is of rigid elastic material and somewhat elongated to completely secure the handset into a gripping position; whereas the lower portion of the housing is made up of relatively thin elastic material acting as a shock absorber. The upper and lower portion is separated by a continuous indentation. The durometer of the material and the indentation permits omnidirectional movement of the handset without affecting the coupling or its operation. A pair of such housings are oriented in an enclosure at an angle similar to the standard telephone to readily receive and immediately seal in position the telephone handset.

3,719,784
ATTENDANT TO TRUNK COUPLER

John A. Adams, Jr., Fairport, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Dec. 23, 1970, Ser. No. 100,890
Int. Cl. H04m *3/00*, *5/08*
U.S. Cl. 179—27 CA 12 Claims



An attendant to trunk coupler includes a plurality of switching circuits connected to the attendant's turret, the register associated with the turret and a plurality of trunks. Each switching circuit includes a four layer diode which provides exclusive access by preventing a conductive path between the

attendant's register and a truck through transmission or control logic leads. Break down of the diode provides a low impedance path to enable only the attendant connected with that particular switching circuit to be connected with a trucnk.

3,719,785

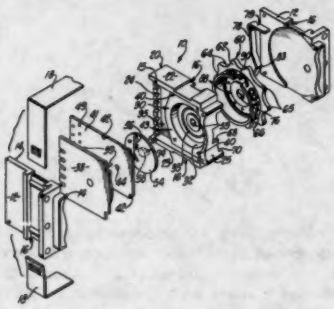
THUMBWHEEL SWITCH ASSEMBLY WITH IMPROVED GANG HOUSING INTERLOCKING MEANS

Thomas L. Kendall, Duarte, and Thomas C. Lincoln, Arcadia, both of Calif., assignors to Bectron, Dickinson Electronics Company, Pasadena, Calif.

Filed April 13, 1971, Ser. No. 133,633

Int. Cl. H01h *19/58, 21/78*

U.S. Cl. 200—11 TW **7 Claims**



A case of a switch structure is provided which has a partition wall which extends from the front to the rear thereof and which divides the case into parts. Rotary electrical contacts are mounted on one side of the partition wall and fixed electrical contacts are mounted on a printed circuit board adjacent to the rotary electrical contacts. A cover plate is provided which holds the printed circuit board in place in the switch case against the partition wall. The cover plate has pins formed on the inside thereof which project through corresponding holes formed in the partition wall. The pins also engage notches and a central aperture formed in the printed circuit plate. The pins of the cover plate accurately align the printed circuit plate for cooperation with the rotary electrical contacts. The cover plate is permanently mounted in position by heat staking the ends of the cover plate pins from the opposite side of the partition wall or by means of hooks on the ends of the pins. The cover plate and the printed circuit plate are thus accurately aligned and permanently held in position against the partition wall.

3,719,786

PUSHBUTTON SLIDE SWITCH ASSEMBLIES WITH INTERCONNECTED LAMINATED SLIDER SWITCH SET ASSEMBLIES ALLOWING ONLY ONE ACTIVATED SWITCH IN A PARTICULAR SET

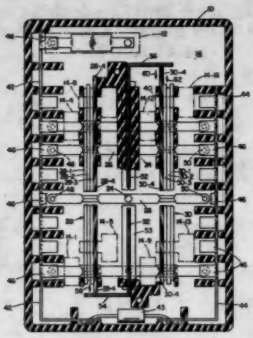
James A. Mallett, Dorchester, and Edward B. Mitchell, Belmont, both of Mass., assignors to Ark-Les Switch Corp., Watertown, Mass.

Filed April 2, 1971, Ser. No. 130,604

Int. Cl. H01h *9/26*

U.S. Cl. 200—5 EB **3 Claims**

A pushbutton slide switch includes two sets of switches, two sets of slides in side by side relationship, each slide set including actuating slides movable for selectively actuating a switch within the corresponding switch set, and interlocking disengagement means comprising an interlock connector and an interlock slide in each slide set. The interlock slides are movable by the connector for simultaneous disengagement of at least one switch in a first switch set in response to closing a switch in the other switch set.



3,719,787

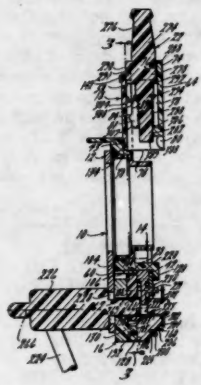
TURN SIGNAL APPARATUS WITH IMPROVED SWITCH STRUCTURE AND PRINTED CIRCUIT BOARD

Jerry J. Tomecek, 1330 Dorre, Troy, Mich.

Continuation of Ser. No. 23,937, March 30, 1970, abandoned. This application June 1, 1971, Ser. No. 148,855

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.27 **25 Claims**



There is herein disclosed a control switch unit for association with the steering column of a vehicle and comprising a one-piece plastic housing member which mounts a plurality of switches, including a turn signal and/or lane change indicating switch and an emergency signal switch, for association with a printed circuit board forming an integral part of the unit.

3,719,788

SWITCH HAVING GANGED CONTACTS MOUNTED ON OPPOSITE SIDES OF CIRCUIT BOARD

Kenneth C. Holland, and Anthony E. Sprando, both of Portland, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

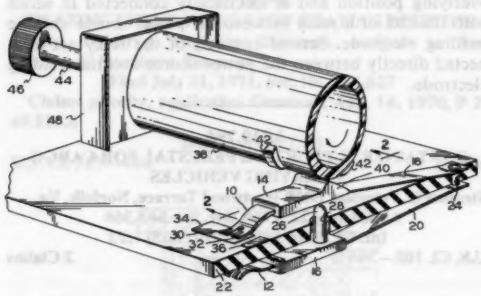
Filed Feb. 4, 1971, Ser. No. 112,583

Int. Cl. H01h *3/42, 19/62*

U.S. Cl. 200—153 LB **17 Claims**

A switch apparatus is described including a pair of movable contacts separately mounted on opposite sides of an etched circuit board and ganged together by a loose coupling including a coupling member extending through a hole in such cir-

cuit board. Fixed contacts are provided as conductive strips on both sides of the circuit board and the movable contacts are moved in and out of engagement with such fixed contacts by a rotary cam actuator mounted on such circuit board. In one embodiment, a cam follower surface is provided on one of a pair of insulator members joining the movable contacts to mounting springs, while in another embodiment the cam follower surface is provided on one end on the coupling member and such coupling member extends through a hole in the support portion of one of the movable contacts, while its other end engages the support portion of the other movable contact. The movable contacts may be short circuiting contacts each including a pair of spaced leg portions through which current flows in opposite directions to produce opposing fields which reduce the contact inductance.

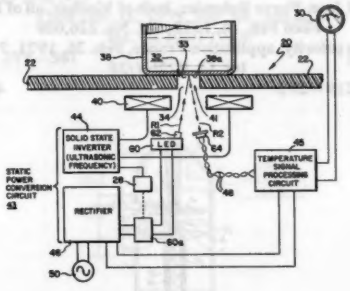


3,719,789

INDUCTION COOKING APPLIANCE INCLUDING TEMPERATURE SENSING OF INDUCTIVELY HEATED COOKING VESSEL BY "MODULATED" LIGHT

John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 29, 1971, Ser. No. 213,352
Int. Cl. H05b *5/08*
U.S. Cl. 219—10.49 **19 Claims**



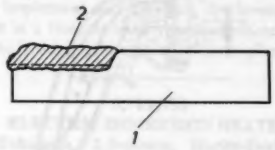
Herein disclosed is an induction cooking range having a counter on which there is supported a cooking vessel to be inductively heated by an induction coil having a central aperture; the induction coil being located below the counter. The cooling vessel, or utensil, has at least on portion thereof coated or covered with a material which changes at least one optical property thereof in response to temperature changes. The coated portion of the vessel which rests on the counter covers a passage provided in the counter; said passage being axially aligned, or in register, with the central aperture of the coil. The range includes a temperature sensing unit comprising an LED for directing monochromatic light through the central aperture and passage onto the vessel's coating. The temperature sensing unit also includes a photodetector for detecting the light reflected from the coating whereby the temperature of the vessel is determinable. In another embodiment the counter is made of light transmitting material and the aforesaid passage is not required; the directed and reflected light passing through the counter.

3,719,790

COMPOSITION AND METHOD FOR FORMING A WELD-SURFACED ALLOYED STEEL LAYER OF STEEL

Erwin Plockinger; Hermann Ornig, and Alfred Schmidt, all of Kapfenberg, Austria, assignors to Gebruder Bohler & Co. Aktiengesellschaft, Kapfenberg, Austria

Continuation-in-part of Ser. No. 580,157, Sept. 15, 1966, which is a continuation-in-part of Ser. No. 490,789, Sept. 28, 1965, abandoned. This application June 21, 1968, Ser. No. 744,603
Claims priority, application Austria, Sept. 17, 1965, A 8490/65; Sept. 17, 1965, A 8491/65
Int. Cl. B23k *9/16*
U.S. Cl. 219—73 **4 Claims**



This invention relates to articles having a wearing surface affixed thereto by means of welding. The invention is particularly applicable to workpieces and tools, such as machine knives.

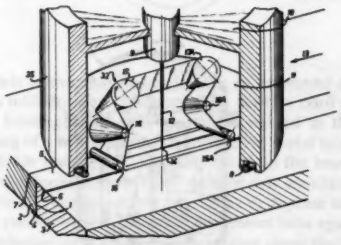
In particular, the invention discloses novel compositions and methods for cladding or surfacing a metal article by means of a so-called band or flat strip electrode thereby producing a very hard wearing layer of allowed steel on said article. The use of flat strip electrodes results in a flat and uniform penetration and, consequently, in a slight and uniform mixing with the base material of the article.

3,719,791

MOBILE FLUID-TIGHT SEALING DEVICE

Jean-Pierre Peyrot, Domaine du Bel-Abord, Chilly-Mazarin, France

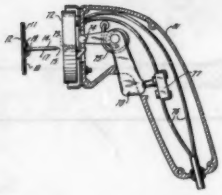
Filed Sept. 16, 1970, Ser. No. 72,647
Claims priority, application France, Oct. 6, 1969, 6934060
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EB **6 Claims**



Fluid tight access device for a welding tool comprising a mobile vacuum chamber, a fixed chamber, a tape, the two edges of said tape being applied on each side of the access of the fixed chamber, conical rollers allowing to displace the mobile chamber as regards to the fixed chamber during the

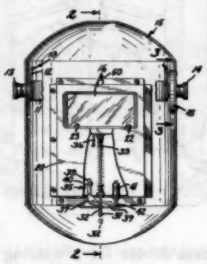
operation of welding without modifying the vacuum of the mobile chamber, the way of the tape being displaced offset the working plane of the tool.

3,719,792
APPARATUS FOR APPLYING A FASTENING DEVICE
Louis M. Cuccaro, 136 Hillcrest Ave., Morristown, N.J.
Filed Feb. 12, 1970, Ser. No. 10,876
Int. Cl. H05b *1/00*
U.S. Cl. 219—230 **2 Claims**



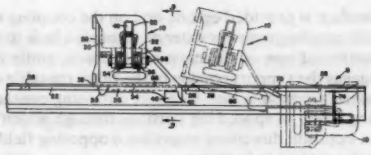
This invention relates to a fastening device which has a plate, a layer of hot melted adhesive adhered to one side of the plate and a mechanical fastening means protruding from the other side of the plate, and to an apparatus for applying the fastening device. The apparatus has an electrically heated element having an aperture therein shaped so that the mechanical fastening means can be passed through the heating element, control means for turning the heating element on and off, and gripping means adapted to clamp onto a portion of the mechanical fastening means which has been inserted through the heating element. The gripping means, which can be selectively moved between non-clamping and clamping positions, is adapted to hold the fastening device so that the side of the plate not covered with adhesive is in direct face-to-face thermal contact with the heating element.

3,719,793
WELDING HELMET
John F. Finger, 308 S. 3rd St., Beresford, S. Dak. 57004
Filed Mar. 4, 1971, Ser. No. 120,811
Int. Cl. B23k *9/32*
U.S. Cl. 219—147 **4 Claims**



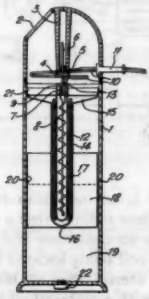
A welding helmet including a head harness and shield with a work viewing opening therethrough and a dark glass slidable between a position overlying the opening and a position adjacent the opening. The dark glass is biased into the overlying position by a spring and maintained in the adjacent position by a latch operated by a solenoid. A rotary switch is mounted between the shield and the harness and electrically connected in series with the solenoid between a power source and the welding electrode. A push-button switch is mounted on the shield for operation by the dark glass as the glass moves into the overlying position and is electrically connected in series with the coil of a relay between the power source and the welding electrode. Sets of contacts of the relay are connected directly between the power source and the welding electrode.

3,719,794
CONTAINER SUPPORTING PEDESTAL FOR CARGO-CARRYING VEHICLES
Stephen G. Peterson, 6038 Westwood Terrace, Norfolk, Va.
Filed July 22, 1969, Ser. No. 843,360
Int. Cl. B61d *3/06, 17/10;* B65j *1/22*
U.S. Cl. 105—366 D **2 Claims**



A cargo-carrying vehicle having a plurality of pedestals adjustably arranged on the bed of the vehicle for supporting the corners of a cargo container, the pedestals being constructed and arranged with respect to the bed as to be folded in a retracted position relative thereto so as to be substantially flush with the vehicle bed and thus provide a smooth surface for the loading and unloading of wheeled vehicles.

3,719,795
ELECTRIC STEAM GENERATOR
Jacques Bolomier, 19, rue Saint-Jean, Lyon; Elisabeth Bolomier, and Jean-Pierre Bolomier, both of Marboz, all of France
Filed Feb. 14, 1972, Ser. No. 226,009
Claims priority, application France, Feb. 26, 1971, 7106878
Int. Cl. F22b *1/28*
U.S. Cl. 219—272 **4 Claims**



An electric steam generator comprises a cylindrical receptacle, containing heating means having a spaced double walled jacket receiving a wick therebetween and open at the top to admit liquid to the wick for vaporization. The heating means comprises a heating wire on the inside of the jacket and is mounted on a float functioning as a piston in the receptacle.

An electric terminal ring is fixed on the upper part of the receptacle and a conductor pin is connected to one end of the heating wire and extends upwardly through said terminal ring in sliding contact with the inner wall of said ring to feed current to said heating wire, while it leaves the terminal ring to brake the current when the liquid has vaporized and the float reaches the bottom of the receptacle.

3,719,796

HEATING UNIT HAVING A PTC HEATING RESISTOR

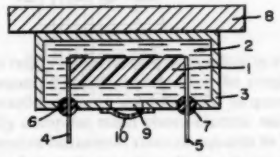
Jorgen Abildtrup, Hojbjerg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed July 21, 1971, Ser. No. 164,627

Claims priority, application Germany, Aug. 14, 1970, P 20 40 523.6

Int. Cl. H05b *3/68*

U.S. Cl. 219—462 **1 Claim**



The invention relates to an electrical heating unit for appliance such as coffee makers, hot plates and the like. The heating unit includes a PTC resistor which is mounted so as to be completely surrounded by a liquid medium so that a uniform temperature is maintained for the external surface of the resistor. This uniform temperature prevents cracking of the resistor due to unevenly distributed thermal strains.

3,719,797

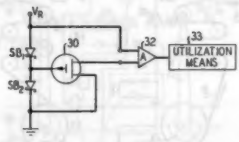
SOLID STATE TEMPERATURE SENSOR EMPLOYING A PAIR OF DISSIMILAR SCHOTTKY-BARRIER DIODES

John Marshall Andrews, Jr., South Whitehall, and Martin Paul Lepselter, Hanover Township, Northampton County, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 16, 1971, Ser. No. 208,614

Int. Cl. H01l *19/00*

U.S. Cl. 219—501 **11 Claims**



The invention provides a solid state temperature sensor having significantly better sensitivity than conventional thermocouples. Basically, the sensor includes a pair of serially connected Schottky-barrier diodes of unequal barrier height and having geometries adapted such that each diode conducts the same reverse current at a given reverse bias and temperature. Because Schottky-barrier diodes of unequal barrier height have unequal thermal coefficients of reverse-biased resistance, the voltage at the common node between the diodes varies with temperature. Such voltage variation is useful for driving heating and/or cooling apparatus to stabilize the temperature of a semiconductor device and, additionally, for driving temperature indicators as in conventional thermometry.

3,719,798

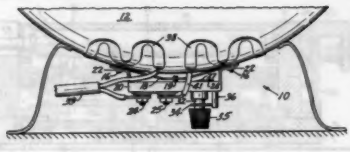
THERMOSTATICALLY CONTROLLED HEATING IMPLEMENT

Donald D. Nelson, Bloomington, and Thomas S. Shevlin, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 19, 1971, Ser. No. 116,997

Int. Cl. H05b *1/02*

U.S. Cl. 219—512 **3 Claims**



A thermostatically controlled heating implement in which one surface of a formed sheet of metal defines the heating surface of the implement and in which the formed sheet forms one element in a bimetal bow-type thermomechanical switch to control the heating temperature of the implement.

3,719,799

ELECTRIC IMMERSION HEATER

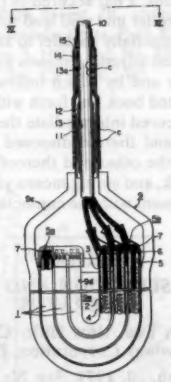
Kiyosumi Takayasu, 2,5-chome, Harita-Dori, Mizuho-ku, Nagoya, Japan

Filed July 19, 1971, Ser. No. 163,927

Claims priority, application Japan, May 22, 1971, 46/41746

Int. Cl. H05b *3/04*; **H02g** *15/04*

U.S. Cl. 219—523 **3 Claims**



An electric immersion heater having an improved connection with a multicore electric cord. The cabtyre cord extends through a holding metal tube gastightly welded to the cord inlet opening of a heater casing. A protective metal tube and a heat-shrinkable resin tube are tightly fitted on the heater-side end of the multicore electric cord. At least one annular groove is formed on the holding metal tube so as to depress the heat-shrinkable resin tube and the protective metal tube against the multicore electric cord for gastightly sealing along the annular groove. A second annular groove may be provided on the holding metal tube at the position facing the protective metal tube. If a reduced diameter portion is provided at that location, a second heat-shrinkable resin tube is applied thereto. The entire connection of the cord to the casing may be covered with an outer resin tube.

3,719,800

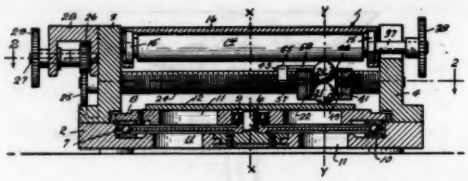
INTEGRATOR COMPENSATOR FOR IMPROVING ACCURACY

William P. Weaver, New Hyde Park, N.Y., assignor to Sperry Rand Corporation, Ford Instrument Company Division, Long Island City, N.Y.

Filed March 26, 1957, Ser. No. 649,590

Int. Cl. G06g *3/08*

U.S. Cl. 235—61 C **20 Claims**



1. In a mechanical integrator having a base, a pair of spaced parallel supporting brackets secured to said base and extending outwardly therefrom, a disk rotatably mounted on said base between said brackets, a roller rotatably mounted between said brackets with the axis thereof disposed perpendicular to and intersecting the axis of said disk, lead screw means rotatably supported by and between said brackets with the axis thereof disposed parallel to the axis of said roller, a carriage mounted on said lead screw means for back and forth movement radially of said disk, and a pair of contacting balls carried by said carriage with one of said balls engaging said disk and the other of said balls engaging said roller, that improvement which comprises; a ball cage in which said balls are mounted, said cage being slidably mounted in said carriage for back and forth movement parallel to the axes of said roller and said lead screw means, a bar secured in fixed position parallel to the axes of said roller and said lead screw means, a flexible track disposed substantially parallel to said bar, a plurality of longitudinally spaced adjusting means by which said track is secured to said bar and by which individual sections of said track may be adjusted back and forth with respect to said bar, a lever pivotally secured intermediate the ends thereof to said carriage with one end thereof disposed in engagement with said ball cage and the other end thereof disposed in engagement with said track, and spring means yieldingly holding said ball cage in engagement with the contacting end of said lever.

3,719,801

ASSOCIATIVE SELECTION AND CORRELATION APPARATUS

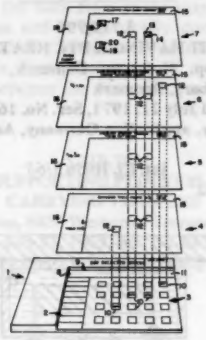
Jerome Drexler, Los Altos Hills, Calif., assignor to Drexler Technology Corporation, Palo Alto, Calif.

Filed Feb. 10, 1971, Ser. No. 116,711

Int. Cl. G06k *21/04*; G09b *23/28*

U.S. Cl. 235—61.12 N **2 Claims**

Associative selection apparatus comprising a thin plastic card containing a plurality of symbols representative of selected items is provided for use with one or more thin plastic overlays, called quality cards. Each quality card contains information respecting a predetermined quality or characteristic of the items listed on the item card. The quality cards are removably held in registration with the item card in a frame. Each quality card contains its information in the form of transparent windows and opaque areas provided to be in registration with the symbols of the items on the item card. The transparent windows and opaque areas permit and prevent respectively visual identication of those items qualifying and failing to qualify with respect to the criterion contained on the quality card. Certain of the quality cards contain information respecting some but not all the items listed on the item card. In those instances, the transparent windows of the quality card are provided with a thin diagonal line, coloration or other similar partial obscuration in registration with the item which was not considered with



respect to such information in order that such items qualifying with respect to other quality cards, may be readily identified. The quality cards may further be used in pairs apart from the item card for determining the correlation between two qualities for all the items or a sampling of such items.

3,719,802

HIGH-SPEED BAND READING DEVICE

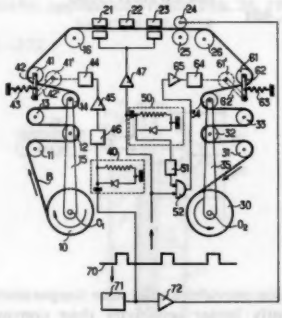
Marcel-Louis Boyer, Chatillon, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed April 22, 1971, Ser. No. 136,496

Claims priority, application France, April 22, 1970, 7014587

Int. Cl. G06k *13/26*; B65h *23/08*

U.S. Cl. 235—61.11 R **8 Claims**



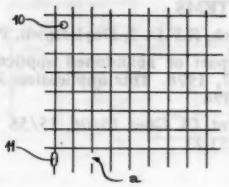
An electromechanical device for a tape winding mechanism which adapts the step-by-step advance at very high speed and at low inertia to the control of the winding and unwinding spools which have a great inertia, in the case where the band must be periodically stopped for an instant, including lightweight pulley arrangements responsive to starting and stopping operations for automatically providing the required slack in the tape to overcome the difficulties created by the high inertia of the spools.

3,719,803

ELECTRONIC READING IN OF DESIGNS FOR THE PREPARATION OF PERFORATED JACQUARD CARDS

Pierre Frappe, Lyon, France, assignor to Verdol S.A., Lyon, France

Filed Jan. 18, 1972, Ser. No. 218,733
Claims priority, application France, Feb. 9, 1971, 7105100
Int. Cl. D03c *15/04*; G06k *19/02, 7/12*
U.S. Cl. 235—61.11 E 4 Claims



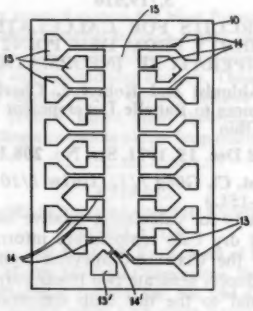
The invention refers to the electronic reading in systems for the designs on squared paper provided for the preparation of the perforated cards or paper used in loom jacquards. These systems generally comprise main photo-electric means which follow the successive horizontal rows of squares to detect the colors thereof and to emit corresponding main signals which are applied to the transducer circuits of a perforating machine through a gating circuit, and auxiliary photo-electric means which scan a succession of vertical lines (actually the vertical lines of the squared paper) to generate auxiliary conditioning signals which are applied to the gating circuit to only condition same when the main photo-electric means are just in front of the center of a square. In order to avoid that a defectively printed vertical line may cause a defective perforation, according to the invention the system further includes chronometric means which generate chronometric pulses in substantial synchronism with the auxiliary pulses, and if some of the latter are missing, these chronometric pulses act on the gating circuit to permit passage of the main signals while the main photo-electric means still scan the central portion of the respective squares to which the missing auxiliary pulses should have corresponded.

3,719,804

PERMANENT INFORMATION STORE

David Anthony Illing, Stoke-on-Trent, England, assignor to International Computers Limited, London, England

Filed June 15, 1971, Ser. No. 153,301
Claims priority, application Great Britain, March 26, 1971, 8,234/71
Int. Cl. G06k *19/06*
U.S. Cl. 235—61.12 N 5 Claims



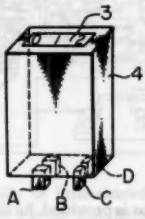
A permanent information storage device has a hidden conductive pattern of first areas selectively connected to a second area. Reading is by energizing capacitive couplings to the first areas and detecting for response in the second area.

3,719,805

PLUG-IN KEY COUNTER

Takeo Tano, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed March 19, 1971, Ser. No. 126,132
Claims priority, application Japan, July 17, 1970, 45/62091
Int. Cl. G06m *1/00*
U.S. Cl. 235—91 R 6 Claims



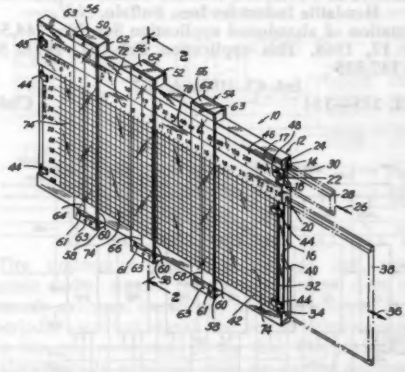
A plug-in key counter according to the present invention is composed of a plug-in unit and its receiving unit which is provided in an apparatus. The plug-in unit provides a counter means and a conducting means, or, at times, only the counter means. In the latter case, the conducting means is included in the receiving unit and is controlled by the insertion of the plug-in unit. With a result of this, a very cheap and simplified plug-in key counter can be obtained.

3,719,806

APPARATUS FOR CALCULATING HALFTONE SCREEN EXPOSURES

Glenn G. Davidson, Park Forest, Ill., assignor to Platemakers Educational & Research Institute, Park Forest, Ill.

Filed Dec. 3, 1971, Ser. No. 204,576
Int. Cl. G06c *3/00*
U.S. Cl. 235—64.7 76 Claims



An improved method and apparatus for calculating halftone screen exposures to produce photographic halftone reproductions useful in printing applications. In one embodiment, a slide-rule type computing apparatus incorporates plots of information including percent dot area versus continuous tone photographic densities, main exposures, percent basic flash exposures (BFE), and percent bump exposures derived empirically from the performance capabilities of the particular halftone reproduction facility used. The method and apparatus

permits the coordinate calculation of main, bump and flash exposures.

3,719,807

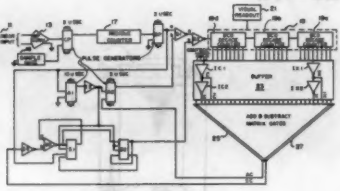
DIGITAL LINEARIZER AND METHOD

Francis Darnall Daley, Jr., Baltimore, Md., assignor to Electronic Modules Corporation, Cockeysville, Md.

Filed April 15, 1970, Ser. No. 28,646

Int. Cl. H03k *13/02, 21/36*

U.S. Cl. 235—92 PL **25 Claims**



A digital linearizer is provided, having a binary coded digital counter and a primary bit generating means for generating a bit count which is a direct function of a a non-linearly measured variable desired to be linearly digitally indicated by the counter. The primary bit input into the counter is controlled by a gate arrangement which enables the addition of a next succeeding accumulative bit from the primary bit source, the addition of a supplementary bit to the counter between primary bit additions, or the inhibiting or defeating of the entry of a bit from the primary bit source to the counter. This gate arrangement is in turn controlled as a function of the examination of each individual sequential numerical count in the counter, and at selected predetermined individual numerical count values in the counter a supplementary compensating bit is added through the gate to the counter, or is effectively subtracted by inhibiting a next succeeding primary bit, based upon a predetermined calculation of theretofore non-compensated non-linearity error required to be compensated at the individual count value in the counter.

3,719,808

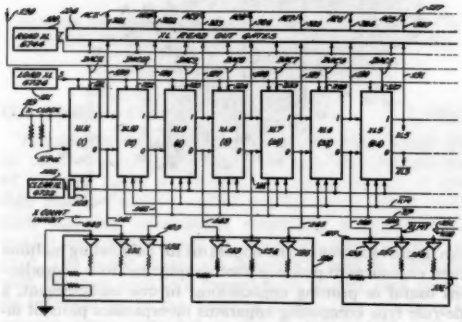
LINEAR DIGITAL-TO-ANALOG CONVERTER

Frederick E. Booth, Jr., Weston, Conn., assignor to Hendaille Industries Inc., Buffalo, N.Y.

Continuation of abandoned application Ser. No. 744,561, July 12, 1968. This application Feb. 22, 1971, Ser. No. 117,835

Int. Cl. H03k *13/02*

U.S. Cl. 235—154 **3 Claims**



A numerical control system having a reversible binary counter and associated digital to analog converter stages wherein command numbers are loaded into the counter in two's complement binary notation but wherein the sign representing counter stage drives its converter stage to provide an increment of analog output in response to a positive command number to provide a linear analog output in the vicinity of zero count.

3,719,809

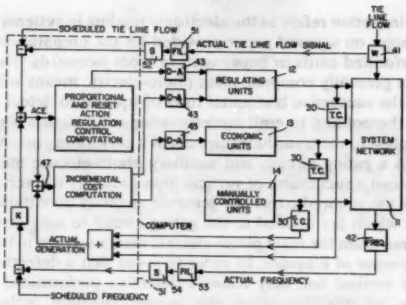
COMPUTER CONTROLLED COORDINATION OF REGULATION AND ECONOMIC DISPATCH IN POWER SYSTEMS

Lester H. Fink, R.F.D. 1, Doylestown, Pa. 18901

Continuation-in-part of abandoned application Ser. No. 6,127, Jan. 27, 1970. This application July 19, 1971, Ser. No. 163,894

Int. Cl. G06f *15/06, 15/56*

U.S. Cl. 235—151.21 **24 Claims**



Computer control of regulation and economic dispatch in a power network is achieved with separation of the dispatch and regulating functions. An independent economic dispatch signal is calculated from a summation of an error signal, representing the difference between system load and system generation, and a total generation signal derived from telemetered actual generation signals. The summation signal is processed to derive the economic dispatch signal which is used to control economic generation units providing the system fixed loading. An independent regulating signal is calculated from the error signal for control of the regulating units which provide the system transient loading.

3,719,810

ANALOG CIRCUITS FOR CALCULATING RELATIVE HUMIDITY FROM DEW POINT AND DRY BULB TEMPERATURE INFORMATION

Norman C. Ahlquist and Robert J. Charlson, Seattle, Wash., assignors to Battelle Development Corporation, Columbus, Ohio

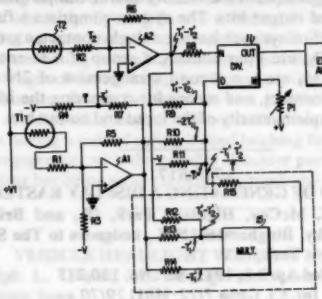
Filed Dec. 15, 1971, Ser. No. 208,148

Int. Cl. G06g *7/32;* **G01w** *1/10*

U.S. Cl. 235—151.3 **24 Claims**

Analog circuits for calculating relative humidity from dew point and dry bulb temperature information in accordance with the Clausius-Clapeyron equation are described. Transducers generate two linear current signals—one proportional to the dry bulb temperature and the other proportional to the dew point temperature. An analog computer acts on the two signals in accordance with the Clausius-Clapeyron equation to produce an output

voltage proportional to the relative humidity. The analog computer acts in accordance with either the exact form



of the Clausius-Clapeyron equation or a modified form, depending upon the embodiment of the invention being used.

3,719,811

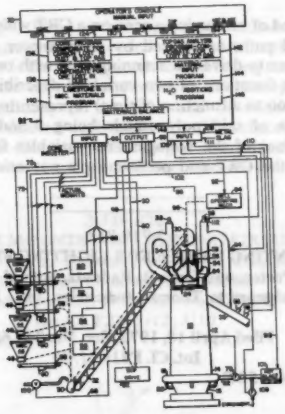
BLAST FURNACE COMPUTER CONTROL UTILIZING FEEDBACK CORRECTIVE SIGNALS

William A. Munson, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 25, 1971, Ser. No. 174,650

Int. Cl. C21b *7/00*

U.S. Cl. 235—151.12 **7 Claims**



A computer control system for blast furnaces designed to maintain a proper material balance within the blast furnace, taking into account outputs including dust losses, top gas analysis, hot metal analysis and slag analysis. These are converted into feedback signals which correct control signals for the blast furnace process based upon theoretical calculations, thereby providing a complete closed loop control system.

3,719,812

DYNAMIC ELECTROMAGNETIC ENVIRONMENT SIMULATOR

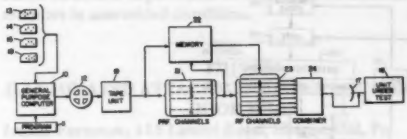
Glick U. Bishop, and Robin B. Knox, both of Littleton, Colo., assignors to Martin Marietta Corporation, New York, N.Y.

Filed Nov. 1, 1971, Ser. No. 194,420

Int. Cl. H03k *1/12;* **G05b** *23/02*

U.S. Cl. 235—151.31 **6 Claims**

This invention is a test system for simulating in real time the electromagnetic signal received by a piece of electronic equipment under test by a plurality of simultaneously operating environmental transmitters having time-varying transmission parameers and having time-varying relative positions with respect to the receiver. The parameters of the dynamic problem are processed by a general purpose computer that provides binary coded digital control data on storage tape. During a test simulation, the tape is run and the tape data is



used to control a plurality of time-shared signal generators that create a plurality of signals simulating in real time the result at the unit under test of the individual signals generated by various emitters in the environment. The outputs of the signal generators are combined and supplied to the unit under test, permitting a realistic appraisal of its performance in real time under the simulated conditions.

3,719,813

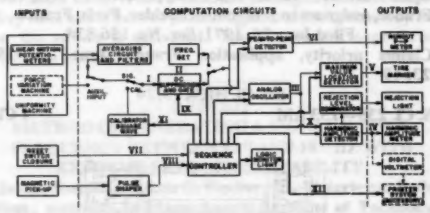
APPARATUS FOR MEASURING UNIFORMITY OF TIRES

Harry Friedmann, Barrington, R.I., and Haig D. Tarpinian, Grosse Pointe, Mich., assignors to Uniroyal, Inc., New York, N.Y.

Original application Sept. 5, 1968, Ser. No. 757,663, now Patent No. 3,550,442, dated Dec. 29, 1970. Divided and this application July 6, 1970, Ser. No. 52,289

Int. Cl. B60c *19/10;* **G01m** *17/02*

U.S. Cl. 235—151.31 **7 Claims**



Tire uniformity measuring method and apparatus wherein radial runout on the outer tread rows is continuously averaged electrically as the tire rotates to obtain a periodic electrical signal, the period being equal to the time for one revolution of the tire. The periodic signal is electronically analyzed with an analog oscillator circuit to obtain the maximum value of its first harmonic component and to determine and mark the location of this maximum value on the tire itself. Associated circuitry and apparatus is disclosed.

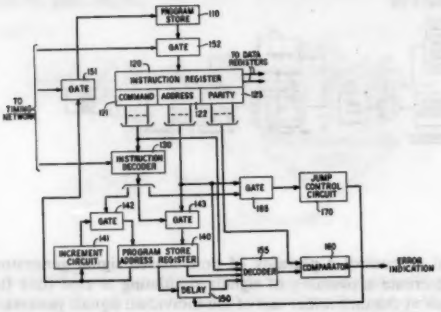
3,719,814

Patent Not Issued For This Number

3,719,815
MEMORY CODING TECHNIQUE

David Michael Rouse, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 26, 1971, Ser. No. 166,130
Int. Cl. G06f *11/00*; G11c *29/00*
U.S. Cl. 235—153 AM 6 Claims

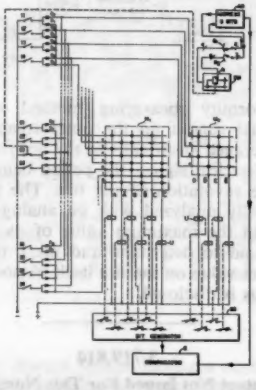


The present invention includes apparatus for generating a first set of check signals encoding not only the address and information bits of a selected word stored in the memory of a stored program machine, but also the address of a preceding word, which may be a transfer word directing a transfer to another word. This first set of check signals is stored in memory with the selected word. Upon retrieval, a second set of check signals is generated for the address and information bits of the selected word and the address of the preceding word. The first and second sets of check signals are compared. Failure of the check sets to match indicates an error in the address, information or order of retrieval of the selected word.

3,719,816
SYSTEM FOR MONITORING THE DECODING OF AN ADDRESS

Jacques Darmon, Sceaux, and Philippe Coffre, Paris, both of France, assignors to Jeumont-Schneider, Paris, France

Filed June 25, 1971, Ser. No. 156,834
Claims priority, application France, June 25, 1970, 7023519
Int. Cl. H03k *13/34*
U.S. Cl. 235—153 AM 1 Claim

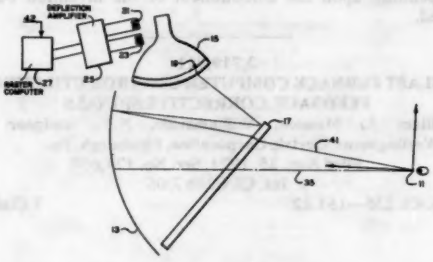


A system for checking the decoding of an address previously encoded in the form of a group of N bits called input bits. The system performs, on one hand, a re-encoding of such address in the form of N output bits identical to the N input bits, and in the form of their complementary bits N, and, on the other hand, compares the identity and/or complementarity of the input and output bits. The system comprises a first arrangement of 2^N relays each having a single contact, a group of n diodes (D_1, D_2, etc.) per contact, a group of *n* re-encoding matrices (M_1, M_2 etc.), a second arrangement of 2N relays each having a contact, and means for comparing the identity and/or the complementarity of the input and output bits.

3,719,817
METHOD OF GENERATING A DISPLAY RASTER

Reginald F. H. McCoy, Highland Park, Ill., and Brian J. Woycechowsky, Binghamton, N.Y., assignors to The Singer Company, New York, N.Y.

Filed April 1, 1971, Ser. No. 130,217
Int. Cl. G06g *7/22*; H01j *29/70*
U.S. Cl. 235—186 9 Claims

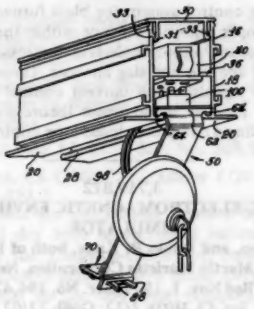


A method of producing a scan on a CRT which will follow a predefined path, as viewed by an observer, by generating two voltages to drive the scanning spot with two polynomials (which are functions of two variables describing the desired spot position as a function of time) representing the path, the coefficients of said polynomials being found by obtaining known values of the voltages and variables for an array of points on the CRT and performing a numerical analysis on said array.

3,719,818
MOUNTING DEVICE FOR LIGHTING FIXTURES

David H. Porter, and Gene R. Raddatz, both of Fort Atkinson, Wis., assignors to Thomas Industries, Inc., Fort Atkinson, Wis.

Filed April 10, 1972, Ser. No. 242,650
Int. Cl. F21v *21/00*
U.S. Cl. 240—52 R 6 Claims



This invention is directed to a mounting device for hanging lighting fixtures on a suspended frame member. The

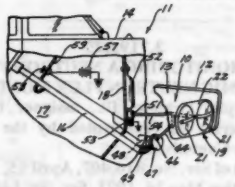
suspended frame member has a conduit portion for carrying electrical wires and has a downwardly facing trackway portion including two parallel spaced-apart shoulder portions. The mounting device of this invention has an elongated mounting bar on which the lighting fixture is fastened. A hanger means provided at one end of the mounting bar is provided with a pair of outwardly extending arm members disposed crosswise to the length of the mounting bar for supporting the one end of the mounting device between the two parallel shoulder portions. At the other end of the mounting bar is a clamping means having a pair of spring-biased latching fingers that snap into engagement with the parallel shoulder portions upon the mounting bar being swung up into the trackway.

3,719,819

VEHICLE HEADLIGHT WASHING SYSTEM

Rudolph L. Lowell, 710 Savings and Loan Building, Des Moines, Iowa

Filed Feb. 25, 1971, Ser. No. 118,623
Int. Cl. B60q *1/00*
U.S. Cl. 240—7.1 **4 Claims**



The headlight lens washer apparatus includes a fluid discharge tube supported for oscillating movement across the lens with one side thereof adjacent to and facing the lens. This facing side of the tube has a plurality of slit-like openings extended longitudinally of the tube and of relative lengths providing for a desired wash pattern on the surface area of the lens. The sheet-like sprays discharged from the tube act to concurrently remove and wash foreign material from the lens.

3,719,820

SOCKET MOUNTS FOR LIGHTING FIXTURES

Martin J. Yarmark, Huntingdon Valley, Pa., assignor to Triboro Electric Corporation, Doylestown, Pa.

Filed March 29, 1971, Ser. No. 128,785
Int. Cl. F21s *1/12, 3/10*
U.S. Cl. 240—81 R **7 Claims**

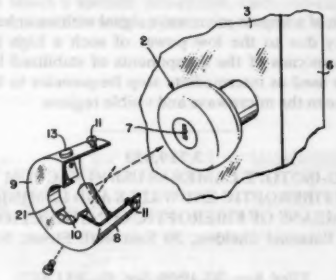
Lighting fixtures provided with structure for mounting a lamp socket on a part of the lighting fixture. A substantially U-shaped springy member is fixed to the lighting fixture part and has a pair of legs extending from the latter part with each leg having a pair of side flanges forming a guide channel from each leg. A bracket is fixed to the lamp socket and is received between the legs of the springy member in the guide channels thereof. The bracket is in the form of an elongated strip received in the guide channels and the springy U-shaped member may be formed with an opening to receive a projection at the free end of the strip which forms the bracket. A catch structure is provided to retain the bracket and springy member in assembled condition.

3,719,821

ILLUMINATED ATTACHMENT FOR A LOCK-EQUIPPED DOOR KNOB

Lester Foreman, 115 Laurel Road, Sharon Hill, Pa.

Filed May 28, 1970, Ser. No. 48,586
Int. Cl. E05b *17/10*
U.S. Cl. 240—2.13 **7 Claims**



An attachment to fit over a door knob provided with a key hole in the center, the attachment including means for selectively holding it to the door knob with security against unauthorized removal. The attachment includes a battery, a switch, and a lamp. It has a central opening to permit access to the key hole and a port to permit light to shine on the key hole when the switch is activated. The attachment superficially resembles a door knob.

3,719,822

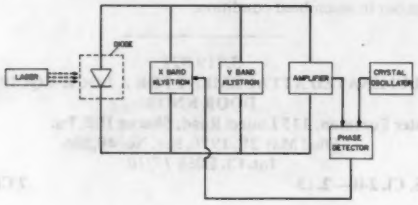
METHOD OF GENERATING A SIGNAL WITH A FREQUENCY BETWEEN 10^{11} AND 10^{15} HZ WITH EXTREME FREQUENCY STABILITY

Ali Javan, Boston, and Lon O. Hocker, III, Watertown, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed March 29, 1971, Ser. No. 128,815
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 H **13 Claims**

The output signal of a laser at a frequency V_f is mixed in a metal point contact diode with the output of a klystron having a variable frequency V_m. Because of the diode's non-linearities, the current flowing through the diode will contain and reradiate sideband components at frequencies $V_s = V_f \pm V_m$. Simultaneously, the diode is subjected to a reference signal with a fixed frequency having a harmonic which falls at a frequency close to one of the sideband frequencies V_s. A beat note is produced which fluctuates in frequency due to the instability of the laser frequency V_f. The beat note frequency is compared with a stable source and an error signal corresponding to the fluctuations is obtained which in turn is used to adjust V_m to compensate for the instability in V_f, whereby the frequency V_s is stabilized to a degree equal to that of the

reference source. Additionally, the frequency of the sideband is determined to the same degree of precision. This information is extremely important and useful in making frequency measurements in the infrared region where it is difficult to produce a beat note by standard techniques of mixing a high



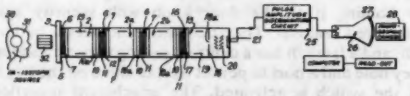
harmonic of a known microwave signal with an unknown high frequency due to the low power of such a high harmonic. Here, harmonics of the components of stabilized laser sideband are used as intermediate step frequencies to bridge the gap between the microwave and visible regions.

3,719,823

RADIO-ISOTOPE CAMERAS USING VACUUM TUBES WITH FIBEROPTIC ENDWALLS AND LUMINISCENT MEANS OF FIBEROPTIC CONSTRUCTION

Edward Emanuel Sheldon, 30 East 40th Street, New York, N.Y.

Filed Aug. 20, 1969, Ser. No. 851,567
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 S **13 Claims**



This invention relates to cameras for visualization of internal organs and their pathology by means of radio-isotopes. The new devices are characterized by the novel combination of an image intensifying tube with a television pick-up tube and with means for rejecting the scattered gamma radiation. In addition the new cameras are provided with novel luminescent screens which are constructed of light conducting members of a tapered shape and phosphors mounted along the sidewalls of said members.

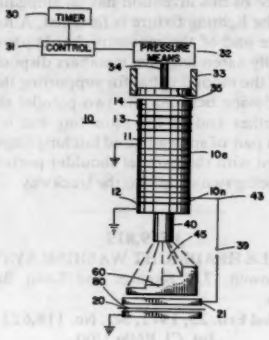
3,719,824

PULSE X-RAY WITH PULSE FIELD ENHANCEMENT OF FILM RESPONSE

Robert C. McMaster, Delaware, Ohio, and Merle L. Rhoten, Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed June 8, 1971, Ser. No. 150,956
Int. Cl. G03b *41/16*
U.S. Cl. 250—65 R **9 Claims**

Apparatus to enhance the speed of radiographic exposures utilizing pulse X-ray generators of the stacked piezoelectric assembly type. Intense electric fields are applied simultaneously across the thickness of the photographic or X-ray film to produce electron avalanches at each center of latent-image response to exposure. The application of the voltage pulse is



synchronized with the pulse or X-rays for the attainment of film speed and contrast enhancement.

3,719,825

METHOD OF MONITORING A NEUTRON FLUX WITH A CERAMIC NEUTRON FLUX MONITOR

Edward A. Snajdr, Urbana, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission

Continuation of Ser. No. 816,407, April 15, 1969. This application May 24, 1971, Ser. No. 146,431
Int. Cl. G01t *3/00*
U.S. Cl. 250—83.1 **2 Claims**

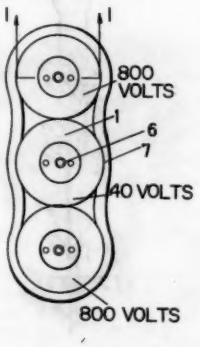
A method of monitoring the neutron flux of a nuclear reactor at high temperatures employing monitors which are pressed and sintered ceramic pellets containing about 99 percent finely ground, high-purity magnesium oxide as matrix material and about 1 percent finely ground, high-purity nickel monooxide or cobaltous oxide uniformly distributed in the matrix material as activation compound.

3,719,826

PERSONNEL IONIZATION DOSIMETERS ESPECIALLY FOR RADIATION OF UNKNOWN COMPOSITION

Mieczyslaw Zielczynski, Nowotki 35 m 99, Warszawa, Poland

Filed May 14, 1969, Ser. No. 824,509
Claims priority, application Poland, Aug. 27, 1968, P. 128804
Int. Cl. G01t *1/14*
U.S. Cl. 250—83.3 PD **7 Claims**



A personal ionization dosimeter comprising a group of three individual dosimeters each including an annular voltage elec-

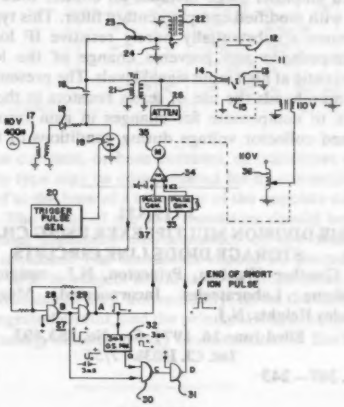
trode defining a housing and a cylindrical test electrode therein, the ratio of the radius of the active surfaces of the electrodes not exceeding 2.5; an auxiliary electrode is provided and a supply capacitor is connected across the auxiliary and voltage electrodes. The dosimeters are filled with a mixture of propane (55 percent), carbon dioxide (41 percent) and nitrogen (4 percent) at a pressure of 28–85 lb/sq. in. One dosimeter has a voltage of 40 volts and the other two a voltage of 800 volts.

3,719,827

REGULATING CIRCUIT FOR A PULSED NEUTRON SOURCE

Charles L. Dennis, Desoto, Tex., assignor to Mobil Oil Corporation

Filed Jan. 29, 1971, Ser. No. 110,934
Int. Cl. G21g 3/00
U.S. Cl. 250—84.5 **6 Claims**



A pulsed neutron system has an accelerator tube having a target, an ionizing section and a replenisher for supplying accelerator gas. The power supplied to the replenisher is controlled to maintain a constant ionizing pulse time duration. A comparator compares the ionization pulse time duration to the time duration of a reference pulse which is produced each time the accelerator tube is pulsed. The comparator produces a pulse output if the ionization pulse is shorter than the reference pulse. This pulse output is applied to an operational amplifier. Also applied to the operational amplifier is a pulse produced each time the accelerator tube is ionized. The operational amplifier produces a control signal which operates a stepping motor in either a forward or reverse direction. The stepping motor positions a variable autotransformer which increments the voltage applied to the replenisher. The voltage (power) applied to the replenisher is continuously adjusted to maintain a constant ionization pulse width.

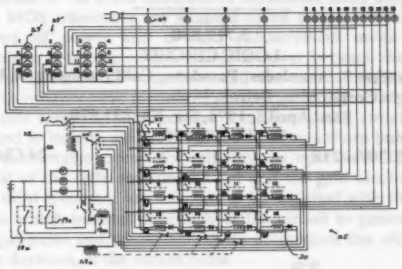
3,719,828

REMOTE CONTROLLED SWITCHING AND INDICATOR DEVICE

Ronald I. Lipskin, 215-15 17th Avenue, Bayside, N.Y.

Filed May 17, 1972, Ser. No. 253,956
Int. Cl. H01h 67/00
U.S. Cl. 307—115 **12 Claims**

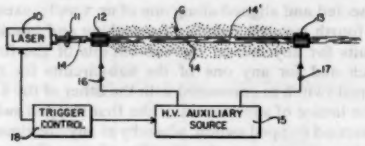
In a preferred embodiment, a switching device and indicator panel suitable for utilization by incapacitated and/or handicapped persons making use of a suck and/or blow activator tube(s), including a plurality of step switches with two initial activators, one initial activator being to select which one of three circuits are to be closed at a particular moment, a first circuit being to first and second stepped switches in parallel for closing, in a fourth circuit, one of several possible stepped contacts connected with alternative separate sub-circuits, any one of which is completable of the closed fourth circuit for one of the first and second stepped switches with a corresponding plurality of contacts closable of the fourth circuit for the other of the first and second stepped switches, each of the sub-circuits of the first and second stepped switches being connected and aligned along one of an x and y axes, and third and fourth stepped switches for making and breaking closed circuits for any one of the sub-circuits of the first stepped switch and for any one of the sub-circuits for the second stepped switch as connected with the other of the x and y axes of the lattice of sub-circuits of the first stepped switch and of the second stepped switch, whereby at any one time a series of switches along a row of a plurality of rows along an x axis is completed in its circuit with one of the completed contacts of the second stepped switch for one series of the plurality of switches in one of a plurality of rows of switches along the y axis, thereby making it possible by selectively choosing the particular sub-circuit of each of the first and second stepped switches to select a specific sub-circuit, each sub-circuit including in series therewith at least one stepped switch activatable of and deactivatable of a power circuit and preferably an indicator light, with a corresponding sub-circuit having an indicator light instead of a stepped switch, whereby the lighting of a specific indicator light is indicative of the activation position for a particular remote switch for turning on or off a particular power circuit, and when a particular power circuit has been selected, the selector switch for selecting one of the first stepped switch, or second stepped switch, or control for turning off and on power through the contacts made in the matched contacts of both of the stepped switches, is activated again so as to step to the control circuit, and then the activator for the control circuit is actuated by sucking or blowing as the case may be on the necessary tube in order to turn on the plug or alternatively to turn off the plug, thereby being a plurality of checkerboard lights matched with a plurality of checkerboard power plugs into which different electrical appliances or the like, such as a toaster, a television set, an FM radio, an AM radio, an intercom, and an automatic or remote controlled typewriter, a tape recorder, a phonograph, a telephone, a call signal for nurse or doctor, or the like are utilizable in one or more of the plurality of available plugs, any one or more of which may be operated separately or simultaneously by virtue of merely the two separate switches which may be separate such and/or blow tubes or may be a single tube of which one switch is activated by sucking and the other switch is activated by blowing.



3,719,829
LASER BEAM TECHNIQUES

Jack Roy Vaill, Alexandria, Va., assignor to Versar, Inc.

Filed April 10, 1970, Ser. No. 27,369
Int. Cl. H02j 1/00
U.S. Cl. 307—149 12 Claims

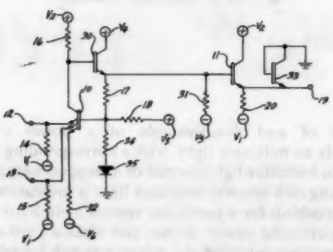


Apparatus and methods in which a laser beam or other light source of comparable steradiancy is employed to establish a low-level ionization trail through a gas medium, and then auxiliary means external to the optical source is employed to increase the ionization within that initial trail to a high level, whereby to form a more highly conductive path over which useful amounts of electrical energy can be conducted for the transmission of intelligence or power.

3,719,830
LOGIC CIRCUIT

Constantine S. Ananiades, Pasadena, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed April 5, 1971, Ser. No. 131,070
Int. Cl. H03k 19/22
U.S. Cl. 307—218 24 Claims

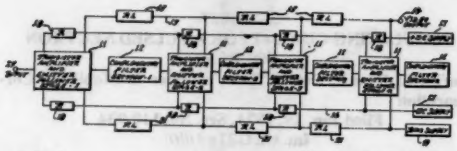


A logic circuit comprising a signal amplifier, a negative feedback connection from the output to the input of the amplifier, a plurality of input terminals, and a plurality of unilateral conductors coupling the respective input terminals to the amplifier so the amplifier output signal is a logical function of binary signals applied to the input terminals. The amplifier is biased to remain unsaturated in response to the binary signal swing at the input terminals, and the negative feedback connection is designed to introduce negligible delay. In an AND gate, the amplifier is a multi-emitter transistor and the unilateral conductors are the emitter-to-base junctions of the transistor. In an OR gate, the amplifier is a transistor and the unilateral conductors are emitter-follower transistor stages coupling the respective input terminals to the emitter of the transistor amplifier.

3,719,831
LOGARITHMIC IF AMPLIFIER

Douglas R. Hamburg, Birmingham, Mich., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 18, 1969, Ser. No. 800,838
Int. Cl. G06g 7/12
U.S. Cl. 307—230 4 Claims

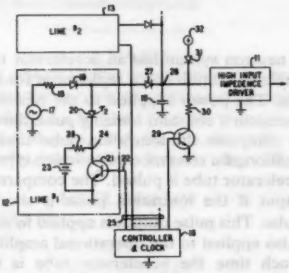


The logarithmic IF amplifier disclosed herein is a synchronously tuned multi-stage cascaded transistor amplifier. Each amplifier stage includes an emitter follower and is loaded with modified complementary filter. This type of loading ensures a substantially purely resistive IF load driving point impedance and prevents change of the logarithmic characteristic at high input signal levels. The present invention also comprehends the use of series resistors in the base bias network to compensate for changes in gain resulting from decreased collector voltage during conditions of high signal level.

3,719,832
TIME DIVISION MULTIPLEXER USING CHARGE STORAGE DIODE LINE CIRCUITS

Sigurd Gunther Waaben, Princeton, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 16, 1971, Ser. No. 153,493
Int. Cl. H03k 17/56
U.S. Cl. 307—243 14 Claims



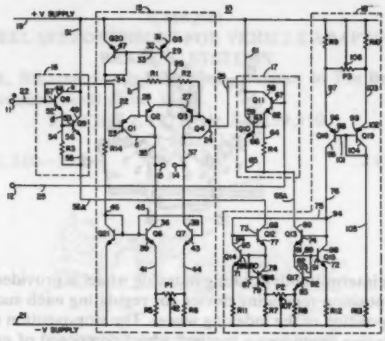
A charge storage diode in a line circuit is charged to different levels by a signal current driven therethrough in the forward direction so that diode charge tracks the instantaneous signal amplitude. A reverse drive is applied to the diode, at a time when it is desired to sample the line signal current amplitude, for transferring the diode charge to a precharged capacitor connected in series with the diode in a separate circuit from the signal current circuit. The reverse drive is maintained for a sufficient time to remove substantially all charge from the diode in the presence of a maximum anticipated precharge level on the capacitor. A plurality of such diode signal current circuits, each having individual ground return connection points to a common ground plane, are fanned into a single capacitor connected to a further connection point of the same plane; and the respective diode reverse drives are controlled so that the capacitor receives samples of line signal currents from the diode circuits in a predetermined sequence.

3,719,833

TECHNIQUE FOR COMPENSATING FOR INPUT BIAS CURRENTS OF TRANSISTORS

Maurice George Free, Tempe, Ariz., assignor to Motorola Inc., Franklin Park, Ill.

Filed Oct. 12, 1970, Ser. No. 79,853
Int. Cl. H03k 17/00
U.S. Cl. 307—296 10 Claims



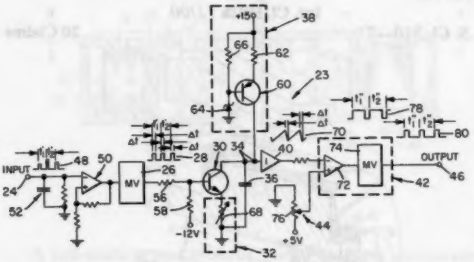
Input bias currents, or base currents, of transistors of one conductivity type may be compensated for by connecting the base thereof to the base of a transistor of the opposite conductivity type. The betas of the two transistors should be equal and the other transistor characteristics of the transistors should be matched. The transistors should be placed close together so as to be subject to the same environmental conditions. The transistors may, conveniently, be on the same chip as in an integrated circuit, and the principal transistors, as well as compensating transistors may be connected as Darlington pairs.

3,719,834

CLOCK PULSE JITTER CORRECTING CIRCUIT

Tich T. Dao, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed June 1, 1971, Ser. No. 148,350
Int. Cl. H03k 5/13
U.S. Cl. 307—269 6 Claims



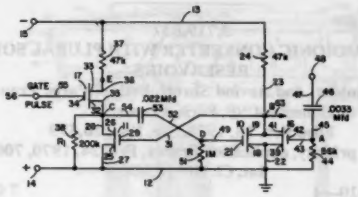
A clock jitter corrector includes a timing capacitor charged by a constant current during two clock pulse intervals. The timing capacitor is discharged by the incoming pulse at high current and fixed duration, resulting in a constant voltage discharge decrement. The resulting sawtooth wave is compared to a DC threshold, whereby the crossover points provide an output clock pulse train with constant pulse intervals. The invention may be cascaded to generate regulated clock pulses of higher frequencies.

3,719,835

VARIABLE DELAY, MOS, MONOSTABLE PULSE GENERATING CIRCUIT

Everett Eberhard, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 1, 1971, Ser. No. 203,810
Int. Cl. H03k 3/26
U.S. Cl. 307—273 13 Claims



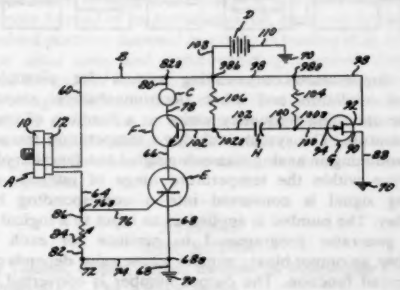
There is disclosed a voltage controlled pulse width, MOS, monostable circuit which comprises first and second enhancement mode MOS transistors wherein the gate electrode of the second MOS transistor is connected to the drain electrode of the first MOS transistor and the gate electrode of the first MOS transistor is connected to an RC timing circuit of which the resistor is connected between the gate electrode and the source electrode and the capacitor is connected from the gate electrode to the drain electrode of the second MOS transistor. The MOS transistors are adapted to be connected across a source of power and a third enhancement mode MOS transistor is connected as a source follower between the drain of the second MOS transistor and the source of power. A fourth enhancement mode MOS transistor is connected across the first transistor and includes a differentiating circuit connected to its gate electrode for introducing a sharp pulse into the monostable circuit for initiating its operation. The terminal of the differentiating circuit and the gate electrode of the third transistor are adapted to be supplied with the gate pulse which initiates operation of the circuit to generate an output pulse and whose amplitude determines the width, or time duration, of the output pulse.

3,719,836

PRESSURE SENSITIVE SENSOR AND CONTROL UNIT AND METHOD OF USING SAME

Clarence R. Possell, 4842 Viane Way, San Diego, Calif.

Filed June 23, 1971, Ser. No. 155,878
Int. Cl. H03k 3/335
U.S. Cl. 307—308 5 Claims



An electrical circuit for energizing a load and continuing to supply current to said load so long as a sensor forming a part of said circuit is subjected to a particular physical condition that permits said sensor to impress a voltage of a predeter-

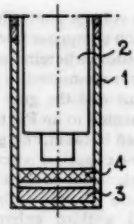
mined magnitude on the gate of a controlled rectifier. The flow of current from said rectifier to said load is further controlled by a transistor, the base of which is subjected to a pulsating current, with said transistor being conductive only during one of said pulses. The current flow to said load is terminated within the time interval between two of said pulses when said impressed voltage of said gate falls below said predetermined magnitude. The switching function of the circuit consequently has a small deadband.

3,719,837

THERMOIONIC CONVERTER WITH PLURAL SOLID RESERVOIRS

Francis Imbert, and Arvind Shroff, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 18, 1971, Ser. No. 116,579
Claims priority, application France, Feb. 24, 1970, 7006596
Int. Cl. H01j *45/00*
U.S. Cl. 310—4 **7 Claims**



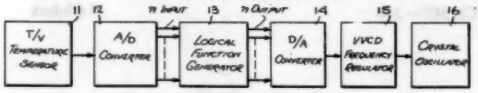
Self - regulating reservoir for ionizable material, incorporated in a thermoionic converter, having a two-stage structure, one stage masking the other, in which the masked section, of large capacity but poor regulating ability, constantly feeds the masking section, of small capacity, but good regulating ability.

3,719,838

TEMPERATURE COMPENSATING DIGITAL SYSTEM FOR ELECTROMECHANICAL RESONATORS

Ralph Peduto, Locust Valley, N.Y., and Jan Willem L. Prak, Hackensack, N.J., assignors to Bulova Watch Company, Inc., New York, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,136
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.1 **14 Claims**



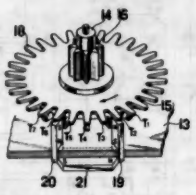
A temperature-compensating system for piezoelectric crystal oscillators and other electromechanical resonators whose operating frequency varies as a function of ambient temperature. The system includes a temperature transducer for producing an analog measuring signal as a function of temperature within the temperature range of interest, which analog signal is converted into a corresponding binary number. The number is applied as an input to a logical function generator programmed to produce for each input number, an output binary number whose value depends on the generated function. The output number is converted to an analog control signal which is applied to a responsive element coupled to the resonator to vary the operating frequency thereof. The arrangement is such that the curve of the frequency shift due to the analog control signal, inversely matches the frequency-temperature curve of the resonator to effect exact frequency compensation therefor.

3,719,839

DEVICE FOR MAGNETICALLY REGULATING EACH STOP POSITION OF AN INTERMITTENTLY ROTATING OUTPUT MEMBER

Yukio Endo, 11-9, Yoshii-cho, Matsudo-shi, Chiba, Japan

Filed March 23, 1971, Ser. No. 127,105
Claims priority, application Japan, March 25, 1970, 45/27866
Int. Cl. H02k *37/00*
U.S. Cl. 310—49 **5 Claims**



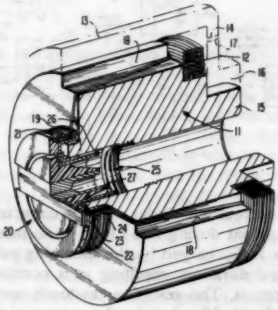
An intermittently rotating indexing wheel is provided with a stop-position regulating device for regulating each successive stop position of the indexing wheel. The stop-position regulating device comprises a toothed wheel composed of magnetic material attached to the indexing wheel and a pair of magnetic members positioned in opposed relationship to the toothed wheel and suitably spaced-apart from each other a distance equal to a whole number multiple of the distance between two teeth on the toothed wheel. A permanent magnet is coupled to the pair of magnetic members and a magnetic circuit is established which includes the pair of magnetic members and the toothed wheel whereby each successive stop position of the toothed wheel and therefore that of the indexing wheel is precisely regulated.

3,719,840

HIGH FREQUENCY TRANSMITTER, ESPECIALLY FOR BRAKE SLIPPAGE CONTROL INSTALLATION OF MOTOR VEHICLES

Manfred H. Burckhardt, Waiblingen; Walter Lutze, Esslingen, and Paul Schwerdt, Esslingen-Hegensberg, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Untertuerkheim, Germany

Filed July 13, 1971, Ser. No. 162,152
Claims priority, application Germany, July 14, 1970, P 20 34 811.2
Int. Cl. H02k *11/00*
U.S. Cl. 310—71 **20 Claims**



A frequency transmitter producing a large number of pulses for the determination of the rotary condition of wheels, espe-

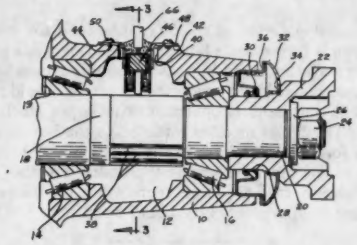
cially for brake slippage control installations of motor vehicles, in which a coil for producing a magnetic field is arranged in a non-rotating part and the non-rotating part cooperates with a rotating part by a toothed arrangement; the two ends are lead out of the winding and, bridging a considerable intermediate space, are extended each to an auxiliary winding including only a few turns whereby the ends of the auxiliary windings are directly connected with the electrical connecting parts.

3,719,841

WHEEL SPEED SENSORS FOR VEHICLE ADAPTIVE BRAKING SYSTEMS

Irving R. Ritsema, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed July 2, 1971, Ser. No. 159,310
Int. Cl. H02k *21/38*
U.S. Cl. 310—155 **2 Claims**



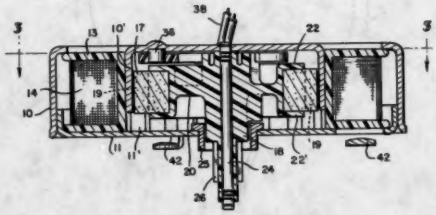
Wheel speed sensing means for adaptive braking systems on vehicles having rotating drive line elements supported by bearings in housings, comprising teeth on one of said rotating elements and mounting an electrical pickup device in an opening in the housing in proximity to said teeth.

3,719,842

SYNCHRONOUS MOTOR

Kenneth C. Kuntz, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed May 28, 1971, Ser. No. 148,004
Int. Cl. H02k *21/08*
U.S. Cl. 310—164 **10 Claims**



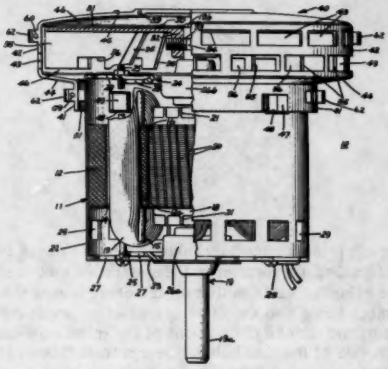
A self-starting synchronous motor includes cooperating shells each providing a plurality of stator poles projecting into an aperture of a field coil providing a stator pole assembly adjacent to poles of a rotor of a synchronous motor, the stator poles being intermeshed to define a circle. The intermeshed stator poles provide a stator arrangement which is asymmetrical for surer starting and alternate flux at individual poles for higher torque. The rotor includes a magnet of a relatively high energy product partial oriented ceramic with individual poles impressed on its periphery. The motor directional system stops the motor from a wrong way directional rotation at a point of high oscillation.

3,719,843

DYNAMOELECTRIC MACHINE COOLING ARRANGEMENT

Richard W. Dochterman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed May 24, 1971, Ser. No. 146,134
Int. Cl. H02k *5/00*
U.S. Cl. 310—89 **10 Claims**



A dynamoelectric machine includes a rotor, a stator and a housing supporting the rotor and stator. There are openings in the housing for flow of air through the housing toward one end. A cover, mounted to the housing, forms a chamber positioned axially beyond the one end of the rotor and stator and extending radially beyond the periphery of the housing. The cover has a plurality of exit openings positioned around the radial edge of the chamber. A centrifugal fan is mounted to the rotor shaft within the chamber and extends radially beyond the periphery of the housing. The fan draws air through the housing into the chamber and discharges it from the chamber in a generally radial direction through the exit openings.

3,719,844

DYNAMO-ELECTRIC MACHINES

Vivian Easton, Newcastle-upon-Tyne, England, assignor to Reyrolle Parsons Limited, Durham, England

Filed July 13, 1970, Ser. No. 54,133
Claims priority, application Great Britain, July 16, 1969, 35881/69
Int. Cl. H02k *3/12*
U.S. Cl. 310—184 **2 Claims**

A rotor winding for a cylindrical air-gap dynamo-electric machine which winding is of concentric coil form wound on a rotor core formed of magnetic material, each coil having slot embedded portions disposed in axially extending slots formed in the rotor core and end-connecting portions disposed beyond the ends of the slots, one or more conductors forming a coil being modified in shape where the extension from a slot embedded portion to an end-connecting portion occurs in such a way that the radial depth of at least part of the end-connecting portion is less than the radial depth of the slot embedded portion.

3,719,845

DISC ROTOR

Naozi Takeda, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 26, 1972, Ser. No. 220,934
Claims priority, application Japan, Jan. 27, 1971, 45/2698
Int. Cl. H02k *1/22*
U.S. Cl. 310—268 **2 Claims**

A plurality of armature elements having the same coil pattern are stacked one upon another, mounted on a shaft with

each element angularly displaced from the adjacent one by an angle equal to that subtended by one segment of the commutator with respect to the center of the shaft and connected with one another to form a wave winding so that a disc rotor consisting of a plurality of similar armature elements may be provided, each of the armature elements comprising a disc-like thin insulator film and spiral conductor coils formed

through printed circuit technique on both sides of the insulator film disc, the number of the spiral coils on one side of the disc being the same as that on the other side of the disc, the number being also the same as that of magnetic poles of the stator, and the coil pitch of one of the spiral coils disposed on each side of the disc being different from those of the other coils on the side of the disc so as to provide a geometrically asymmetrical coil pattern.

3,719,846

X-RAY TUBE

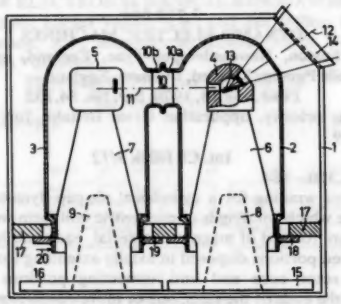
Werner Berends, Hamburg; Heinz-Jurgen Jacob, Hamburg-Glashutte, and Harry Eggelsmann, Hamburg, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 8, 1971, Ser. No. 104,968

Claims priority, application Germany, Feb. 25, 1970, P 20 08 782.5

Int. Cl. H01j *35/14*

U.S. Cl. 313—57 **1 Claim**



The invention relates to an X-ray tube in which the anode and the cathode are accommodated in two parallel adjacent evvelopes which are interconnected by a tubular member through which the electron beam passes. At high voltage (300 kV and higher) the direction of the electron beam and the direction of the maximum of the X-rays are inclined at an obtuse angle to one another. Thus the electrons impinge on the target nearly at grazing incidence. Even at slight deviation of the relative positions of the anode and cathode envelopes from the prescribed positions the focal spot is greatly shifted. According to the invention the two envelopes are relatively movable, causing substantially a deformation of the coupling-member only which is capable of deformation owing to the use of an appropriate construction and/or a suitable material.

3,719,847

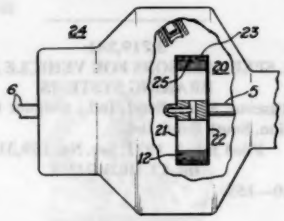
LIQUID COOLED X-RAY TUBE ANODE

Harold F. Webster, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,299

Int. Cl. H01j *35/04*

U.S. Cl. 313—60 **12 Claims**



The rotating anode of an X-ray tube used for medical examination is formed as a hollow member having a portion of its outer surface formed by an X-ray emitting metal and filled with liquid metal which evaporates to provide rapid cooling of the anode and permits operation with larger electron beam powers. The liquid metal is returned to the hot spot by centrifugal force. In one form of the anode a metal mesh is attached to the inner surface of the hollow member to retain liquid metal next to the target metal while the tube is cooling below the melting point of the liquid metal.

3,719,848

IMPROVEMENT IN CATHODE RAY TUBES FOR COLOR TV RECEIVERS HAVING A POST-ACCELERATION GRID ELECTRODE

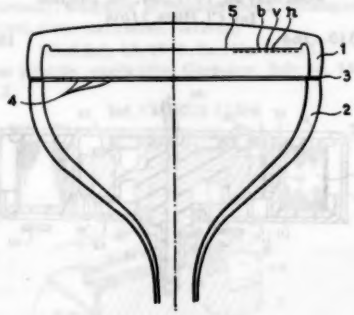
Georges M. Bradu, Nemours, France, assignor to Societe des Uerreries Industrielles Reunies du Loing, Paris, France

Filed Nov. 12, 1968, Ser. No. 775,070

Claims priority, application France, Nov. 9, 1967, 67127494

Int. Cl. H01j *29/06, 31/20*

U.S. Cl. 313—85 S **7 Claims**



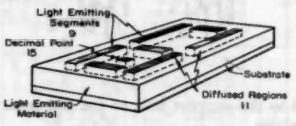
A two part hermetically sealed glass envelope or ampoule in the form of a cathode ray tube wherein the two portions comprise a vision screen member and a cone member which are sealed along a plane containing a sheet of parallel metal wires acting as a control grid electrode. A network of parallel and equidistance grooves are formed along oppositely disposed portions of the edge of at least one of the two members. The grid wires are placed in respective grooves so as to maintain the wires in parallel equidistance relation to one another. The edges into which the grooves are formed are disposed in a common plane between the cone and vision screen members. The grooves may be arranged in either a chamfered portion of

the edge, or the thicker portion of the edge of at least one of the members of the envelope.

3,719,849
SOLID STATE DISPLAYS

Robert L. Steward, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sept. 24, 1971, Ser. No. 183,491
Int. Cl. H01j 7/42
U.S. Cl. 313—109.5 **2 Claims**

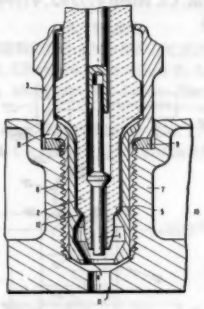


A decimal point element is located within the boundaries of the charaCter element on a monolithic solid state character chip. When a character string is displayed, only the decimal point is energized on one character chip. This results in wide separation between the decimal point and its nearby characters Hence readability of the decimal point in improved in long character strings.

3,719,850
SPARK PLUG ESPECIALLY FOR ROTARY PISTON INTERNAL COMBUSTION ENGINES

Manfred Schafer, Am Sonnenhang, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed March 17, 1971, Ser. No. 125,253
Claims priority, application Germany, March 17, 1970, P 20 12 516.0
Int. Cl. H01t 13/16
U.S. Cl. 313—118 **11 Claims**



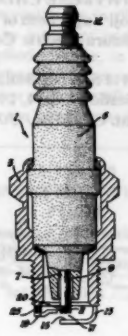
Spark plug for rotary piston internal combustion engines having a two-part outer conductive housing including an outer threaded portion of high strength and an inner portion having a high heat conductivity so that heat is conducted longitudinally away from the discharge end of the plug to an area where it will be more efficiently conducted to the engine housing.

3,719,851
DUAL MODE SPARK PLUG

Harvey A. Burley, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 28, 1971, Ser. No. 157,474
Int. Cl. H01t 13/46
U.S. Cl. 313—123 **2 Claims**

An improved spark plug comprising an insulator and shell assembly having a center electrode and a shell-connected ground electrode forming a wide spark gap therebetween, a third electrode having electrical resistance characteristics secured to the shell and forming a narrow spark gap with the center electrode, the ground and third electrodes being so positioned relative to each other as to control the ionization of

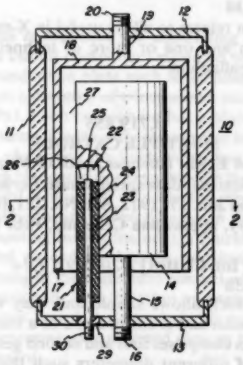


gas in the wide gap, the operation being such that under heavy engine loads (low manifold vacuum) the narrow gap only sparks while under light engine loads (high manifold vacuum) the sparking in the narrow gap triggers wide gap sparking and is itself then extinguished.

3,719,852
COAXIAL ELECTRIC ARC DISCHARGE DEVICES

Charles P. Goody, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,977
Int. Cl. H01j 17/12
U.S. Cl. 313—178 **9 Claims**



Triggerable electric arc discharge device includes coaxial cathode and anode electrodes defining therebetween a hollow cylindrical primary arcing gap. A trigger assembly having an elongated longitudinal configuration is inserted into a longitudinal bore formed in and adjacent to the surface of the cathode electrode so as to be partially exposed into the interelectrode gap. Trigger assembly includes a ceramic hollow cylinder surrounding a metallic trigger electrode. Trigger gap is defined by extension of the trigger electrode past the inboard end of the trigger ceramic insulator and a trigger gap exists between the extended portion of the trigger electrode over the inboard end of the ceramic insulator and to the body of the cathode electrode. A voltage is connected between anode and cathode electrodes and a relatively low voltage pulse is supplied to the trigger electrode, causing breakdown of the

trigger gap. Trigger arc formed thereby causes propulsion of ionized specie into the main gap and breakdown thereof.

3,719,853

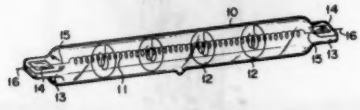
HALOGEN LAMPS CONTAINING METHYL BROMIDE OR METHYLENE CHLORIDE

Keiichi Sugano, and Yooji Yuge, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation-in-part of Ser. No. 868,881, Oct. 23, 1969, abandoned. This application Aug. 4, 1971, Ser. No. 168,872

Int. Cl. H01k *1/50*

U.S. Cl. 313—222 **2 Claims**



A lamp exhibiting a long life characteristic includes in a bulb a mixture of methyl bromide and methylene chloride, the amount of methyl bromide and methylene chloride being respectively within the range of 0.03 to 0.55 μmol and 0.02 to 0.25 μmol per cc of the volume of the bulb.

3,719,854

TUNGSTEN ALLOY X-RAY TARGET

Karl Sedlatschek; Rudolf A. Machenschalk, and Bernd Natter, all of Reutte/Tirol, Austria, assignors to Schwarzkopf Development Corporation, New York, N.Y.

Filed July 8, 1970, Ser. No. 53,334

Claims priority, application Austria, July 24, 1969, A/7169/69

Int. Cl. H01j *35/08*

U.S. Cl. 313—330 **16 Claims**

This invention relates to alloys useful in X-ray targets comprising tungsten and one or more of technetium, rhodium, ruthenium and palladium.

3,719,855

MULTIPLE CATHODE

Alois Staffa, and Erwin Huebner, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

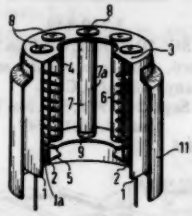
Filed Jan. 27, 1972, Ser. No. 221,163

Claims priority, application Germany, Feb. 12, 1971, P 21 06 745.8

Int. Cl. H01j *1/20, 1/92, 1/14*

U.S. Cl. 313—338 **6 Claims**

A cathode which allows simple and easy variance in the amount of emission and is constructed of a minimum number of different parts comprises first and second generally concentric cylinders of different diameters such that the cylinders have a space therebetween, which space may receive a heating unit therein. Each of the first and second cylinders have radially extending overlapping flanges joined to each other and one of the cylinders has a lower flange generally below and generally parallel to the upper flanges. At least three hollow tubular emission carriers are positioned between the upper and lower flanges and evenly distributed around the cylinders. The method of making the cathode and particularly the emission carriers comprises the steps of applying a thick layer of tungsten suspended in a liquid coating to the outer surface of a form, pre-sintering the coating to rigidify it, removing the rigidified coating from the form and finally sintering the coating to form a shell for the tubular emission carrier. Upper and lower plugs close opposite ends of the shell whereby it serves as a container or carrier for the cathode emission material. Three or more of the emission material carriers are inserted into aligned holes in flanges of a cylindrically shaped support unit. A cylindrically shaped member of a thin or foil material



is connected to the support unit to the dispenser cathode to the tube envelope.

3,719,856

IMPREGNANTS FOR DISPENSER CATHODES

Otto G. Koppius, P.O. Box 187, Highways 27 & 50, Clermont, Fla.

Filed May 19, 1971, Ser. No. 144,916

Int. Cl. H01j *1/14, 19/06*

U.S. Cl. 313—346 DC **4 Claims**

A dispenser cathode suitable for use as an electron emitter for microwave tubes and the like. The dispenser cathode is constituted by a porous body of refractory material such as tungsten, impregnated with a fused mixture of barium oxide, and at least one oxide of a rare earth metal, such as holmium oxide, terbium oxide, thulium oxide or yttrium oxide.

3,719,857

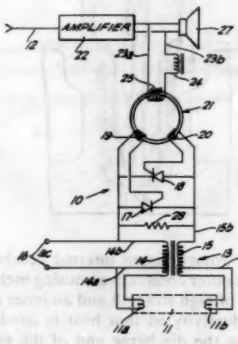
AUDIO RESPONSIVE INTENSITY MODULATOR FOR FLUORESCENT AND LIKE LAMPS

Paul H. Sharp, Sierra Madre, Calif., assignor to Columbia Broadcasting Systems, Inc., New York, N.Y.

Filed June 21, 1971, Ser. No. 154,822

Int. Cl. H05b *41/392, 41/44*

U.S. Cl. 315—156 **15 Claims**



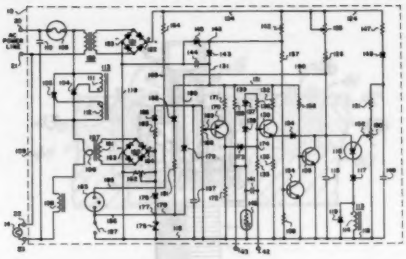
The intensity of a fluorescent, ultraviolet or other gas discharge lamp is modulated in response to the amplitude of an audio signal. A dimmer or blinking ballast transformer is connected to the lamp. Power from an ac source is conducted to the ballast transformer via a controlled rectifier for a portion of each ac half cycle. The phase angle at which the controlled rectifier is fired is established by trigger means responsive to the instantaneous amplitude of the audio signal, thereby producing interesting optical effects directly correlated to that audio signal.

3,719,858

OVERLOAD PROTECTION SYSTEM FOR A LIGHT DIMMER UNIT

Benjamin F. Gilbreath, Richardson, Tex., assignor to Hunt Electronics Company, Dallas, Tex.

Filed Aug. 2, 1971, Ser. No. 168,005
Int. Cl. H02h 3/08
U.S. Cl. 317—16 8 Claims



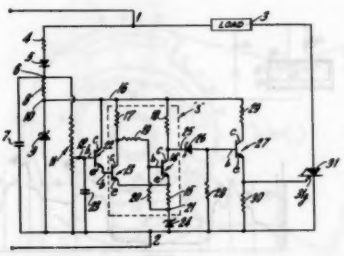
In a light dimmer unit having a switching mechanism for controlling the alternating current flow to a lamp load and a controllable timing mechanism for controlling the fraction of each half cycle during which the switching mechanism is conductive, there is provided a current sensing mechanism for sensing the alternating current supplied to the lamp load. An average overload circuit is coupled to the output of the current sensing mechanism for clamping the timing of the dimmer timing mechanism at a predetermined value when the average value of the lamp load current exceeds a desired maximum value. A peak overload circuit is also coupled to the output of the current sensing mechanism for disabling the dimmer timing mechanism for discontinuing the flow of current to the lamp load when the peak value of the lamp load current exceeds a desired maximum.

3,719,859

VOLTAGE SENSING AND SWITCHING CIRCUIT

Richard J. Frantz, Cheshire, and Alton R. Morris, Rocky Hill, both of Conn., assignors to Arrow-Hart, Inc., Hartford, Conn.

Filed Aug. 31, 1971, Ser. No. 176,587
Int. Cl. H03k 3/295; H02h 3/08
U.S. Cl. 317—31 7 Claims



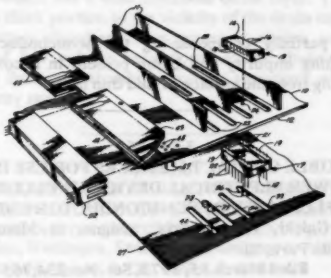
A circuit to sense variations in alternating voltage applied to a load and to interrupt power flow to the load on reduction of the applied voltage, including a rectifier to rectify the alternating voltage, a voltage regulator to apply a constant level part of the rectified voltage as the power supply to a Schmitt trigger, part of the rectified voltage controlling conductivity of a transistor that provides the input signal to the Schmitt trigger according to variations in the rectified alternating applied voltage, a Zener diode to reference the Schmitt trigger at a voltage slightly below the voltage applied to the transistor controlling the trigger, a Zener diode at the output of the trigger to control the presence or absence of signals from the Schmitt trigger to a further transistor that controls the gate of a triac connected in the power line to the load, and the triac being gated to a non-conductive state to block power flow to the load upon reduced alternating applied power. Said circuit also can be used to sense variations in direct current voltage applied to a load and to interrupt power flow to the load on reduction of the applied voltage, in which circumstance no rectifier is used and the direct current applied voltage is utilized in the same manner as the rectified voltage when alternating voltage variations are being sensed.

3,719,860

CIRCUIT COMPONENT MOUNTING WITH COOLING PLATE

Robert Lawrence, Encino, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 30, 1971, Ser. No. 185,147
Int. Cl. H05k 7/20
U.S. Cl. 317—100 17 Claims



An apparatus is disclosed for controlling the thermal environment of a circuit component mounted to a circuit board. A thermally conductive plate such as an aluminum extrusion serves to mount a plurality of components such as dual-in-line packages (DIPs). Each component has a plurality of leads extending in the same direction therefrom and is mounted to one surface of the plate with the leads extending away from, and aligned with, an elongated opening through the plate. One side of a circuit board is mounted adjacent the other surface of the plate by mounting means coupled between the board and the plate. The mounting means includes a plurality of pins each having one end extending through and insulated from the elongated opening in the plate, into contact with an associated lead on the component, and the other end extending through a hole in the circuit board. A desired circuit may be formed by electrically interconnecting selected pins on the opposite side of the circuit board.

3,719,861

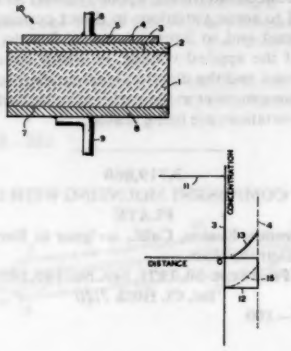
P-N JUNCTION DEVICE AND A METHOD OF MAKING THE SAME

Tadashi Shiraishi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Continuation of Ser. No. 832,980, June 13, 1969, abandoned.
This application April 30, 1971, Ser. No. 139,149
Int. Cl. H01l 9/00
U.S. Cl. 317—234 R 4 Claims

A P-N junction device has a base of one type of semiconductive material and a thin layer of another type of semiconductive material thereon. Each semiconductive material has a semiconductivity type determining impurity therein, the semiconductivity type determining impurity in said thin layer

being present in a concentration lower than the concentration of the semiconductivity type determining impurity in said base and said thin layer having opposite type impurity material



therein partially compensating the semiconductivity type determining impurity and being present in a concentration decreasing from the surface of said thin layer.

3,719,862

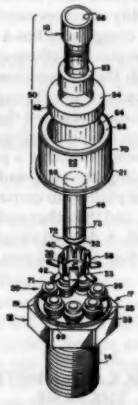
FLEXIBLE CONTACT MEMBERS FOR USE IN HIGH POWER ELECTRICAL DEVICES INCLUDING A PLURALITY OF SEMICONDUCTOR UNITS

Stanley Gaicki, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

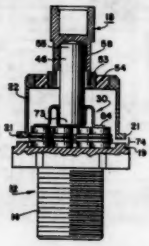
Filed March 15, 1972, Ser. No. 234,765

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **11 Claims**



The invention is embodied in a one-piece connecting and assembly member wherein electrical contact is made by flexible contact portions on the member between one end of each of a plurality of fragile semiconductor units and a separate rigid contact member in a high power rectifier or the like. This contact is accomplished while protecting the semiconductor units from physical stresses which could otherwise be applied to them during manufacture and during thermal expansion and contraction of a high power device employing the semiconductor units. The flexible connecting and assembly member includes a cup-shaped portion having an opening for mating with one end of a rigid connecting stud in the high power device and a plurality of contacting fingers extending between the cup-shaped portion and each of the semiconductor units. Each of the fingers is comprised of a U-shaped portion, having first and second integral legs which extend generally in opposite directions along the axis of the cup-



shaped portion and a shaped contacting portion. Furthermore, an additional contacting finger may be formed from the bottom of the cup-shaped portion for making electrical contact to an additional semiconductor unit. The use of the connecting and assembly member facilitates the manufacture of high power heat generating semiconductor devices, and in the ultimate use of such devices accommodates changes in temperature and the expansion and contraction of the devices utilizing such member.

3,719,863

LIGHT SENSITIVE THYRISTOR

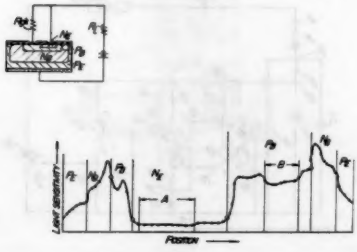
Takuzo Ogawa, and Masao Iimura, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 816,527, April 16, 1969, abandoned. This application Nov. 8, 1971, Ser. No. 196,292

Claims priority, application Japan, April 17, 1968, 43/25207

Int. Cl. H01l *15/00*

U.S. Cl. 317—235 R **10 Claims**



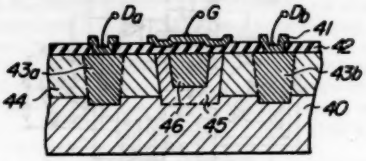
A high light-sensitive thyristor, wherein two external regions and two internal regions have opposite conductivity types and lie adjacently to each other, the edges of the three PN junctions being formed thereby extend to one plane surface, the area of the external emitter region at the plane surface to be illuminated being, 10 – 25 percent of the total of the areas of the first base region outside said external region and of the second base region outside said first region.

3,719,864

SEMICONDUCTOR DEVICE WITH TWO MOS TRANSISTORS OF NON-SYMMETRICAL TYPE

Kenji Taniguchi, Kodaira, and Ichiro Imaizumi, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 8, 1971, Ser. No. 151,054
Claims priority, application Japan, June 10, 1970, 45/49444
Int. Cl. H01l *11/14*, *19/00*
U.S. Cl. 317—235 R 1 Claim



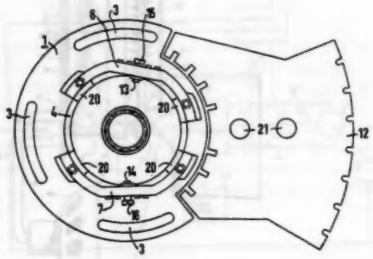
A semiconductor device constituted by two MOS transistors of diffusion-self-alignment type, the source electrode and the gate electrode of one transistor being connected with the source electrode and the gate electrode of the other transistor, respectively. In the device, the mutually connected gate electrodes serve as a new gate electrode, while the drain electrode of said one transistor serves as a new drain electrode and the drain electrode of said other transistor serves as a new source electrode.

3,719,865

BRUSHLESS DIRECT-CURRENT MOTOR INCLUDING MECHANICALLY ADJUSTABLE GALVANOMAGNETIC MEMBERS

Hanns Ott; Jurgen Wenk, both of Nurnberg, and Hans-Peter Latussek, Feucht, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Feb. 18, 1971, Ser. No. 116,571
Claims priority, application Germany, Feb. 18, 1970, P 20 07 254.2
Int. Cl. H02k *29/00*
U.S. Cl. 318—254 8 Claims



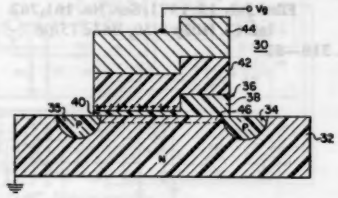
A brushless direct-current motor has a stator having a stator winding, a rotor, a control magnet rotatable in synchronism with the rotor and a plurality of galvanomagnetic members mounted in proximity with the control magnet. Also provided is an adjustment device for displacing the galvanomagnetic members in coaxial relation to the control magnet through an angle corresponding to at least twice the pole pitch of the rotor.

3,719,866

SEMICONDUCTOR MEMORY DEVICE

Charles T. Naber, Centerville, and George C. Lockwood, Kettering, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Dec. 3, 1970, Ser. No. 94,861
Int. Cl. H01l *11/14*
U.S. Cl. 317—235 R 17 Claims



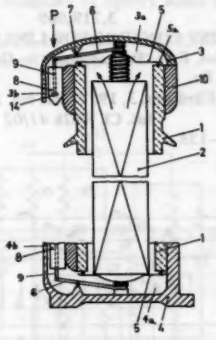
An improved metal-nitride-oxide-semiconductor device is described which has a dual thickness oxide layer. The oxide layer has a thick portion in the vicinity of the drain region and a thin portion elsewhere. The improved device solves the problem of low voltage breakdown of the drain-substrate diode and limits the threshold voltage variations within the same polarity range.

3,719,867

EXPLOSION-PROOF LIGHTNING ARRESTER INCLUDING CONDUCTIVE LIQUID TO EXPEDITE FORMATION OF EXTERNAL SHUNT PATH

Eugen Meier, Wettingen, Switzerland, assignor to Aktiengesellschaft, Brown, Boveri & Cie, Baden, Switzerland

Filed May 19, 1972, Ser. No. 254,915
Int. Cl. H02h *1/04*
U.S. Cl. 317—63 6 Claims



An explosion-proof lightning arrester structure includes active elements contained within an insulating housing which is provided at each end with an electrical fitting including a pressure-relief device and an associated gas-deflection outlet by means of which the discharged gas forms a temporary electrical bridge outside of the housing between the end fittings in shunt with the electrical circuit internally of the housing between these fittings. To expedite formation of the external shunt path, a spray cylinder is located at each gas-deflection outlet from which a jet of a conductive liquid is automatically released when the pressure-relief device responds and gas is discharged from the outlet.

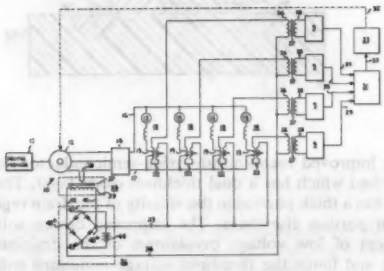
ERRATUM

For Class 318—254 see:
Patent No. 3,719,865

3,719,868
ALTERNATING CURRENT POWER SOURCE OF A WHEEL SLIP CONTROL SYSTEM

Lloyd W. McSparran, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed July 12, 1971, Ser. No. 161,762
Int. Cl. H02p *5/50;* B61c *15/08*
U.S. Cl. 318—52 6 Claims

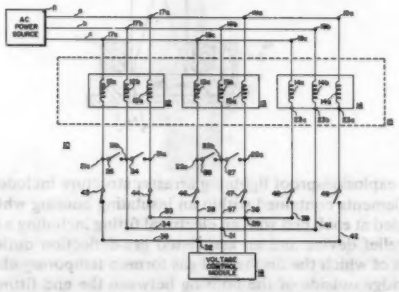


A wheel slip control system for a traction vehicle driven by motors receiving power from a traction alternator through rectifiers, the system having a plurality of current measuring devices each connected to the armature of one of the motors and adapted to provide a signal responsive to the armature current, wherein the signals are employed to control the output of the traction alternator through its excitation system. The current measuring device requires a-c power of a magnitude proportional to armature current which is provided by a current transformer having its primary connected to the traction alternator output and its secondary connected to the current measuring device.

3,719,869
THRUST CONTROL FOR LINEAR MOTORS

Owen C. Coho, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Jan. 3, 1972, Ser. No. 215,066
Int. Cl. H02k *41/02*
U.S. Cl. 318—135 6 Claims

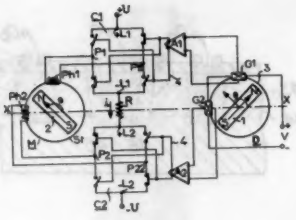


An apparatus and process for controlling the thrust of a linear induction motor as its speed is increased by sequentially energizing electrically decoupled stator sections and increasing the voltage applied to each by successively modulating each section with a single relatively small phase-controlled rectifier system.

3,719,870
D.C. MOTOR WITH SERIES CONNECTED WINDINGS

Marc Bregeault, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 23, 1970, Ser. No. 92,048
Claims priority, application France, Nov. 28, 1969, 6941140
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 5 Claims

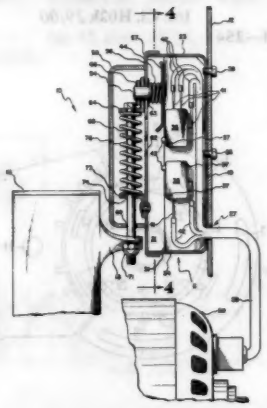


A d.c. motor, the armature of which comprises at least two windings in two-phase arrangement, and supplied with a direct current whose direction reverses periodically. The armature windings are series-connected through inverter circuits. This arrangement improves the efficiency of the motor and the smoothness of the torque. The motor finds a wide field of applications, in particular in space engineering field.

3,719,871
CAM ACTUATED SWITCHING ASSEMBLY

Douglas R. Houst, Pattersonville, and Kamal Iskandar, Scotia, both of N.Y., assignors to General Electric Company, Erie, Pa.

Filed Dec. 22, 1971, Ser. No. 211,011
Int. Cl. B60t *13/00*
U.S. Cl. 318—139 27 Claims

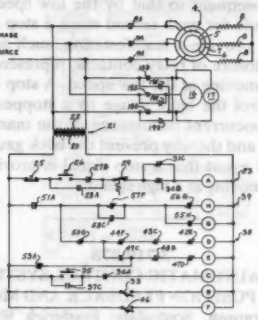


A throttle switch assembly for electric traction vehicles wherein the pivoting of a foot pedal causes linear movement of a spring biased rod and attached cam having a contact surface canted with respect to plural rows of switches so as to sequentially engage and actuate the switches in one row and subsequently sequentially accuate the switches in successive rows to change the power output from the vehicle motor.

3,719,872
ACCELERATION CONTROLLER FOR A DUAL STATOR INDUCTION MOTOR

Donald M. Mains, Greendale, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Oct. 1, 1971, Ser. No. 185,501
Int. Cl. H02p 1/26
U.S. Cl. 318—214 7 Claims

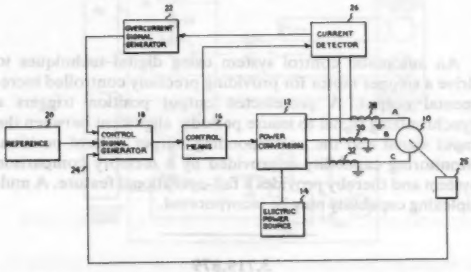


The rotatable stator segment of a dual stator motor is revolved by an actuator motor in steps between a zero torque orientation and a maximum torque orientation. During start-up the actuator motor is controlled by an acceleration relay to increase the induction motor output torque each time it is activated by a pair of timing relays. During shut-down the actuator motor is controlled by a deceleration relay to decrease the induction motor output torque each time it is actuated by the timing relays. The minimum and maximum torque limits are sensed by switches which are connected to stop rotation of the rotatable stator segment when closed.

3,719,873
CURRENT LIMITING CONTROL FOR AN ELECTRIC POWER SYSTEM

Carlton Eugene Graf, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed June 15, 1971, Ser. No. 153,246
Int. Cl. H02p ; H02m
U.S. Cl. 318—227 6 Claims

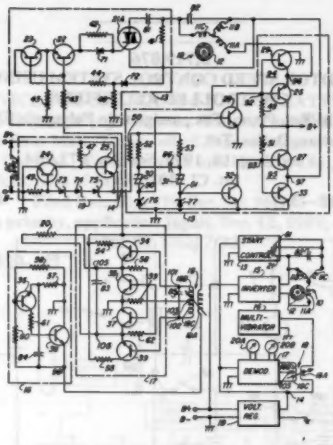


A power system includes power conversion apparatus for supplying electric power to a load and control apparatus for varying the power output of the power conversion apparatus. A signal representative of an operating parameter such as output current is sensed and utilized to produce a signal only when the operating parameter exceeds a predetermined level, and the signal is utilized in turn by the control apparatus to reduce the level of operating parameter irrespective of independent changes in magnitude and polarity of any and all other input signals to the control apparatus.

3,719,874
A. C. POWER SUPPLY FOR RATE GYRO

John Van Dyke, Byron Center, and Bernard Lamfers, Jenison, both of Mich., assignors to R. C. Inc., Grand Rapids, Mich.

Division of Ser. No. 794,018, Jan. 27, 1969. This application Oct. 16, 1970, Ser. No. 81,417
Int. Cl. H02p 5/40
U.S. Cl. 318—227 4 Claims

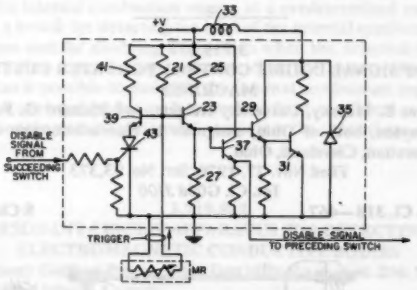


A full wave transformerless A.C. power supply for the spin motor of a rate gyro, comprising driver amplifiers and bridge switching circuits controlled by a frequency-determining oscillator, inverting a D.C. power signal to generate an A.C. drive signal for the rate gyro spin motor without appreciable loading of the power supply.

3,719,875
BRUSHLESS D.C. MOTOR USING MAGNETO RESISTOR SENSING MEANS

Eugene E. Holland, Charlottesville, and Rex O. Jones, III, Burgess, both of Va., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,932
Int. Cl. H02k 29/00
U.S. Cl. 318—254 8 Claims



A brushless d.c. motor having a diametrically magnetized permanent magnet rotor and a plurality of stator windings disposed around the inner periphery of the motor frame, employs magneto resistors placed intermediate adjacent windings to trigger commutating switches that control energization of the individual stator windings. All stator windings are wound to attract the same selected magnetic pole of the rotor. The rise in resistance of a magneto resistor when subjected to flux from the selected magnetic pole is used to close the switch

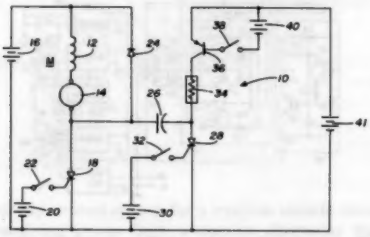
controlling the following stator winding in the desired sequence. The switch also produces a disabling signal that triggers a silicon controlled rectifier in the preceding switch so as to open this switch. The magneto resistor controlling the disabled switch is disposed diametrically opposite the energized stator winding so that when the flux from the non-selected rotor pole intercepts this resistor, the associated switch remains clamped in the open condition.

3,719,876

MOTOR SPEED CONTROL SYSTEM USING CONTROLLED RECTIFIERS

Luther B. Miller, Plano, Tex., assignor to Polyspede Electronics Corporation, Dallas, Tex.

Filed Aug. 18, 1971, Ser. No. 172,784
Int. Cl. H02p *5/16*
U.S. Cl. 318—341 **14 Claims**



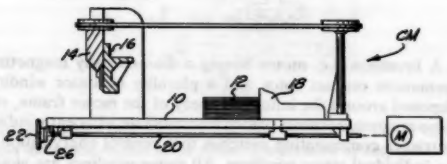
A DC motor control system which includes a first controlled rectifier connected in series between a DC voltage source and a DC motor. A second controlled rectifier is connected across the first controlled rectifier, with a capacitor connected between the anodes of the first and second controlled rectifiers. Control signals are applied to the gates of the first and second controlled rectifiers to selectively fire the rectifiers. At least one transistor switch is connected between the DC voltage source and the anode of the second controlled rectifier and is operable in response to the application of control signals for controlling the flow of current to the capacitor. Circuitry is provided to modulate the frequency of control signals applied to the controlled rectifiers for speeds below a predetermined speed threshold. Circuitry modulates the width of the control signal pulses applied to the controlled rectifiers for control of the DC motor for speeds over the predetermined speed threshold.

3,719,877

STOP SIGNAL INHIBIT CONTROL FOR PAPER CUTTING MACHINES

James E. Murray, University Heights, and Richard G. Foley, Dayton, both of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed Nov. 27, 1970, Ser. No. 93,373
Int. Cl. G05d *3/00*
U.S. Cl. 318—467 **8 Claims**



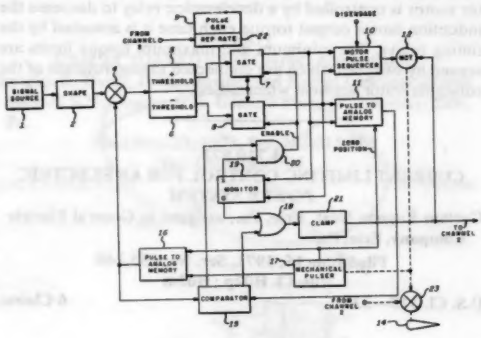
A paper cutting machine control is provided for purposes of controlling the positioning of a movable back gauge relative to a guillotine type tool in dependence upon position command marks recorded on a record member. The back gauge is normally advanced toward the tool at a high speed and relative motion is imparted between the record member and the mark sensors proportional to the velocity of the back gauge. One of the mark sensors serves to sense a mark in advance of that by the second mark sensor and provides a low speed signal for application to a low speed control means to control movement of the back gauge at a low speed. The second mark sensor senses each mark subsequent to that by the low speed sensor, and serves to provide for each sensed mark a stop signal. Circuit mean serve to provide a manifestation, such as an electrical signal or the closure of relay contacts, representative that the back gauge is moving at the low speed. A stop control means serves to control the back gauge to a stopped condition in response to concurrent occurrence of the manifestation and the stop signal and thereby prevent the back gauge from being stopped in the event that a stop signal is provided while the back gauge is moving at a high speed.

3,719,878

DIGITAL AUTOMATIC CONTROL SYSTEM WITH PSEUDO POSITION FEEDBACK AND MONITOR

Donald C. Ferguson, Scottsdale; Frederick W. Lynch, and Gerald F. Simons, both of Phoenix, all of Ariz., assignors to Sperry Rand Corporation, Great Neck, N.Y.

Division of Ser. No. 31,986, April 27, 1970. This application Sept. 27, 1971, Ser. No. 184,133
Int. Cl. G05b *23/02*
U.S. Cl. 318—565 **5 Claims**



An automatic control system using digital techniques to drive a stepper motor for providing precisely controlled incremental output. A preselected output position triggers a synchronizing signal to insure periodic alignment between the input signal and the corresponding output control position. Monitoring capability is provided by a memory comparison system and thereby provides a fail-operational feature. A multiplexing capability may be incorporated.

3,719,879

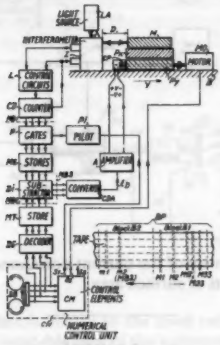
SYSTEM FOR ACCURATELY POSITIONING AN OBJECT UNDER THE CONTROL OF PROGRAMMED NUMERICAL DATA

Raymond Marcy, Paris, France, assignor to Thomson-CSF, Paris, France

Filed July 15, 1971, Ser. No. 162,846
Claims priority, application France, July 17, 1970, 7026430
Int. Cl. G05b *11/18*
U.S. Cl. 318—593 **10 Claims**

System for accurately positioning objects in one plane by means of translational movements in one or more directions

which comprises a numerically controlled stepping motor providing a coarse displacement, and piezoelectric ceramics included in a digital control loop for providing a fine displacement upon halting of the motor.



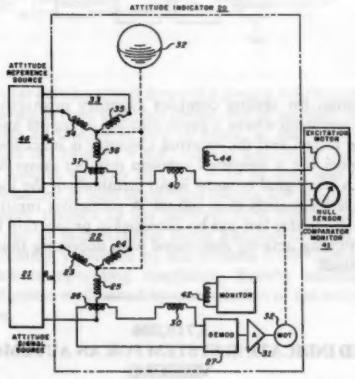
The system is applicable in particular to mask machines used for the manufacture of integrated circuitry.

3,719,880

SERVO COMPENSATION INCLUDING A NON-LINEAR SYNCHRO TRANSMITTER

Richard P. Boynton, and Robert C. Ellis, Jr., both of Durham, N.C., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,873
Int. Cl. G05b *11/01*; G05d *23/275*
U.S. Cl. 318—633 **7 Claims**



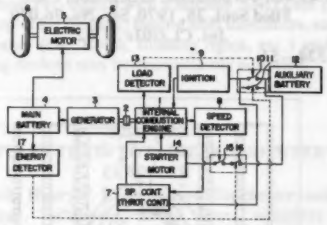
A conventional synchro device; including a rotor, a stator, a three-phase winding and a single phase winding, is modified by the addition of a trim winding which is inductively coupled to the three phase winding and provides non-linear operation of the synchro. The trim winding is electrically coupled to the single phase winding to provide a null indication when the respective output voltages from these windings are substantially equal. In order to obtain the null indication, output angle data from the synchro must vary in a non-linear manner with respect to applied input angle data. An additional shorted damping winding, may be inductively coupled to the single phase winding and the trim winding to produce a flux which counteracts flux induced in the single phase and trim windings thereby reducing the voltages in the trim winding and the single phase winding. The voltage in the single phase winding is reduced to a greater extent than the voltage in the trim winding and the non-linearity between the input angle data and the output angle data over limited ranges of input angle is further increased.

3,719,881

DEVICE FOR CHARGING STORAGE BATTERY

Takanori Shibata; Ryoji Kasama; Shotaro Naito, all of Katsuta, and Shin Mali, Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama-shi and Hitachi, Ltd., Chiyoda-ku, Tokyo, both of Japan

Filed Dec. 10, 1970, Ser. No. 96,935
Claims priority, application Japan, Dec. 12, 1969, 44/99430
Int. Cl. H02j *7/32*
U.S. Cl. 320—62 **17 Claims**



Battery charger comprising means for detecting the specific gravity of the electrolyte of the battery and for closing the ignition and starter circuits of the internal combustion engine when the detected specific gravity is below a prescribed value, and thus starting said internal combustion engine which drives the generator for charging the battery; a switch for disabling said starter when the internal combustion engine rotates at a speed higher than its starting rotation speed; a device for automatically controlling the throttle valve of said internal combustion engine for the purpose of keeping the rotation speed of the internal combustion engine at a predetermined value; and a switch for detecting the load of the internal combustion engine and for disabling the ignition when the detected load falls below a predetermined value; thus, the battery charger makes it possible to maintain the internal combustion engine to be operated under an intermediate load condition and to reduce the amount of harmful contents in the exhaust gas.

3,719,882

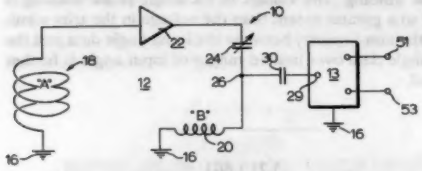
RESONANT CIRCUIT APPARATUS FOR DETECTING ELECTROMAGNETIC CONDUCTIVE BODIES

Anthony Godfrey Pincus, 1057 Don Mills Road, Apt. 204, Don Mills, Ontario, Canada

Filed Nov. 12, 1970, Ser. No. 88,944
Int. Cl. G01v *3/10*, *3/16*
U.S. Cl. 324—3 **6 Claims**

An apparatus for detecting the presence of electromagnetic conductive bodies comprises two coils which are coupled through a high gain, high impedance amplifier and tuning capacitor with the other end of each coil going to ground so as to form a tank circuit. The coils are mounted so as to be essentially de-coupled with their axes mutually perpendicular. One

of the coils is self resonant with a natural resonant frequency in the audio range. The circuit is tuned to the natural resonant frequency by the tuning capacitor and inductive coupling



between the coils improves when the circuit is near an electromagnetic conductive body. A capacitor circuit is employed to detect and measure shift in one or more of the tank circuit parameters including output signal level, frequency and phase.

3,719,883

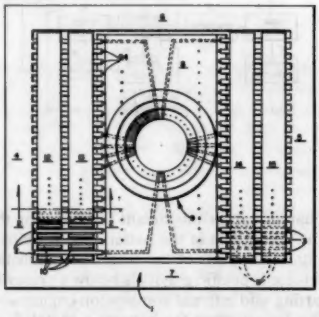
MAGNETIC CORE CIRCUIT FOR TESTING ELECTRICAL SHORT CIRCUITS BETWEEN LEADS OF A MULTI-LEAD CIRCUIT PACKAGE

Eugene E. Pentecost, Anaheim, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Sept. 28, 1970, Ser. No. 76,079

Int. Cl. G01r *31/02*

U.S. Cl. 324—51 **3 Claims**



A voltage is induced in at least one lead of a multi-lead package for an electronic circuit by one or more excitation cores disposed around one or more leads of the package. The leads are connected together at one end by the lead frame. The opposite ends of the leads are secured to a housing for the electronic circuit. One or more detection cores, disposed around one or more leads of the package and suitably spaced from the excitation cores, detect current in the lead circuit encompassed by the excitation and detection cores. A relatively high voltage is induced in the detection cores if a short circuit exists in the encompassed lead circuit while a relatively low voltage is induced in the detection cores if an open circuit is detected.

3,719,884

PROCESS AND APPARATUS FOR DETERMINING THE POROSITY OF A DIELECTRIC LAYER COATING A METALLIC SURFACE

Rene Laroche, Fribourg, Switzerland, assignor to Aluminum Suisse S.A., Chippis, Switzerland

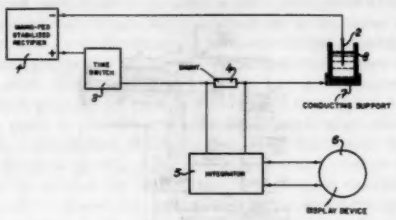
Filed Feb. 16, 1971, Ser. No. 115,429

Claims priority, application Switzerland, Feb. 17, 1970, 2220/70

Int. Cl. G01r *31/12*

U.S. Cl. 324—54 **4 Claims**

A process for determining the porosity of a layer of dielectric material coating a metallic surface comprises electrophoretically depositing an insulating component of an electrophoretic varnish on parts of the metallic surface in the to



pores. The quantity of the current consumed is measured and displayed in units of surface area.

3,719,885

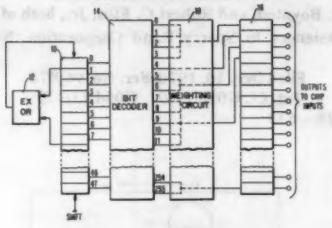
STATISTICAL LOGIC TEST SYSTEM HAVING A WEIGHTED RANDOM TEST PATTERN GENERATOR

Robert Gordon Carpenter; Eric Lindbloom, both of Poughkeepsie, and Maurice Thomas McMahon, Jr., Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,460

Int. Cl. G01r *15/12*

U.S. Cl. 324—73 R **9 Claims**



A system for testing complex circuitry primarily in large scale integration where a great number of inputs and outputs must be tested and the internal circuitry is inaccessible. The test system has a weighted random number generator which applies a test signal to some input terminals of the logic under test more frequently than others. A particular input terminal to the logic under test can be accessed in proportion to the circuit switching activity associated with accessing that particular terminal.

3,719,886

SPEED INDICATING SYSTEM FOR AN AUTOMOTIVE VEHICLE

Lawrence J. Vanderberg, Ann Arbor, and John L. Wenzel, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

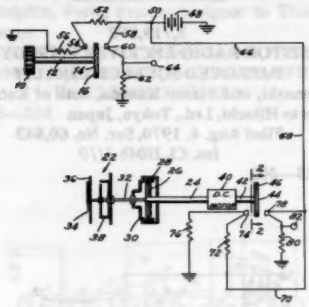
Filed Dec. 31, 1970, Ser. No. 103,214

Int. Cl. G01p *3/36, 3/56*; G01r *23/02*

U.S. Cl. 324—167 **3 Claims**

A speed indicating system for an automotive vehicle, including a display means for displaying the speed of the vehicle, which is driven by an electrical motor. Means are coupled to a rotatable part of the vehicle and to the electric motor for driving the electric motor at a speed which has a fixed ratio with respect to the speed of the rotatable part of the automotive

vehicle. This last mentioned means includes speed sensing means for sensing the speed of the electric motor and locking



the speed of the electric motor to the fixed ratio with respect to the speed of the rotatable part of the automotive vehicle.

3,719,887

DEVICE FOR DETECTING THE ROTATION OF WHEELS

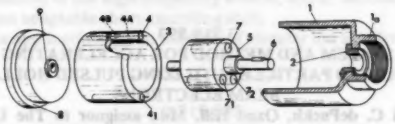
Tetsuji Shimizu; Sohei Hibino, both of Nagoya; Haruo Miwa, Minokamo, and Nobukatsu Inagaki, Nagoya, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishi, Kasugai-gan, Aichi Pre., Japan

Filed March 10, 1970, Ser. No. 18,041

Claims priority, application Japan, March 13, 1969, 44/21873

Int. Cl. G01p *3/48*

U.S. Cl. 324—171 **6 Claims**



A vehicular driving speed detecting device which comprises a stator having R reed switches connected in parallel, wherein R represents an integer of two or more, at the interval of a central angle of $(2\pi/n)(1+KR)$ radians wherein K represents zero or a natural number of $(n/R-1)$ or less, and a rotor rotatably inserted in said stator and having n/R magnets near the periphery thereof at the interval of a central angle of $(2\pi R)/n$, one of said magnets being adapted to keep, by an angle of rotation γ defined by the formula $0<\gamma<(2\pi/n)$, one reed switch in operating condition, thereby enabling the number of pulses n obtained by one rotation of the rotor to be six or more.

3,719,888

PREDETERMINED SPEED DETECTOR FOR DIGITAL TACHOMETER

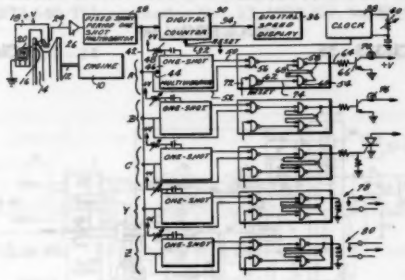
Harry R. Sampey, Vanderbilt, Pa., assignor to Pentron Industries, Inc., Cleveland, Ohio

Filed May 26, 1971, Ser. No. 147,148

Int. Cl. G01p *3/56, 3/48, 3/54*

U.S. Cl. 324—161 **12 Claims**

An improved predetermined speed detector for use in a digital tachometer where signal pulses proportional in repetition rate to engine speed or RPM are available. The signal pulses are used to trigger a monostable multivibrator such that the duty cycle of the monostable output is a function of the signal pulse repetition rate (hence RPM) and the characteristic period of the monostable circuit. The time coincidence of the input signal pulses and the monostable output is then detected to obtain an indication of a predetermined duty cycle and hence engine RPM for any given characteristic monostable time period. Thus by merely detecting the time coincidence of these two signals with a latched AND gate (such as an RS flip-flop or equivalent) engine shift indicators, excessive speed indicators (i.e., horns, flashing lights, etc.) and/or engine disabling devices may be conveniently actuated.



3,719,889

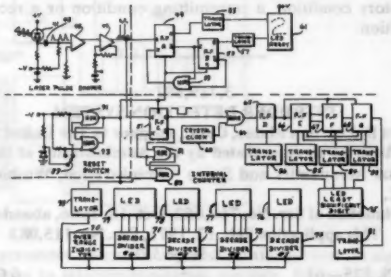
LASER PULSE TRAIN TOTALIZER AND INTERVAL COUNTER

Ronald A. Belz; Henry T. Kalb, both of Manchester, and James D. Trolinger, Tullahoma, all of Tenn., assignors to the United States of America as represented by Secretary of the Air Force, Washington, D.C.

Filed Dec. 14, 1971, Ser. No. 207,754

Int. Cl. G04f *9/00, 11/06;* **H01j** *39/12*

U.S. Cl. 324—186 **4 Claims**



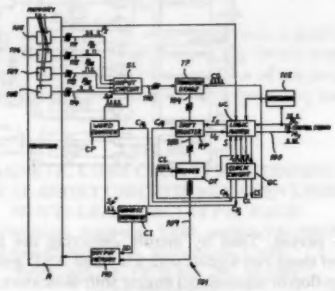
Pulses from a laser pulse train are detected and square wave shaped to trigger a first flip-flop in which one complementary output activating one input of a display comprising an array of light emitting diodes while the other output triggers a NOR gate and a second flip-flop, one complementary output thereof feeding a second input of the display with the other complementary output feeding the NOR gate which then feeds back to inhibit the first flip-flop. The square wave also activates a third flip-flop with one cpmplementary output thereof enabling a NOR gate for passing clock pulses which are decade divided and displayed on light emitting diode arrays. The other output of the third flip-flop feeds a pair of cross coupled NOR gates acting as a flip-flop, the output thereof being fed back to inhibit the third flip-flop.

3,719,890

TRANSCEIVER FOR PERIPHERAL STATION OF MULTIPLEX TELECOMMUNICATION SYSTEM

Franco Borciani, and Gaetano Musarra, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milano, Italy

Filed Nov. 22, 1971, Ser. No. 200,802
Claims priority, application Italy, Nov. 20, 1970, 31976 A/70
Int. Cl. H04b 1/00
U.S. Cl. 325—55 10 Claims



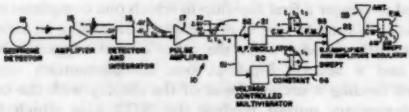
A peripheral station of a pulse-code-modulation telemetring system, identified by an address code, has a logic matrix responding to the arrival of an incoming message from an associated central station by commanding a clock circuit to generate a series of pulses for controlling the inscription of the message words in a shift register and the readout thereof to an address comparator and to an output memory. The address comparator, upon ascertaining identity between the station's code and the first part of the stored message, enables the memory to transmit the remainder of the message to a processor which initiates the transmission of an outgoing message to the central office by triggering the logic matrix to call forth another pulse sequence from the clock circuit. The logic matrix comprises a set of AND and OR gates serving to set and reset several flip-flops which mark a quiescent condition, a transitory condition, a transmitting condition or a receiving condition.

3,719,891

INTRUDER DETECTION SYSTEM

Robert D. Lee, San Mateo, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 768,662, Oct. 18, 1966, abandoned. This application Feb. 12, 1971, Ser. No. 115,083
Int. Cl. H03c 5/00
U.S. Cl. 325—61 6 Claims



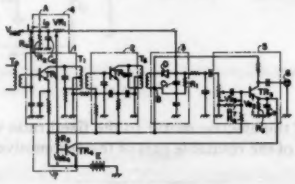
An intruder detection system in which a transmitter transmits a frequency modulated and amplitude modulated signal to a remote receiver in response to a transducer, such as a geophone detector, picking-up seismic impulse created by one or more intruders. In this manner, an operator listening to the receiver can identify the number of intruders, and also can identify the movements of the intruder or intruders, such as walking, running and the like.

3,719,892

TRANSISTOR RADIO RECEIVER EMPLOYING AN IMPROVED SQUELCH CIRCUIT

Seishi Yamazaki, and Masao Kaneda, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 4, 1970, Ser. No. 60,843
Int. Cl. H04b 1/10
U.S. Cl. 325—402 11 Claims



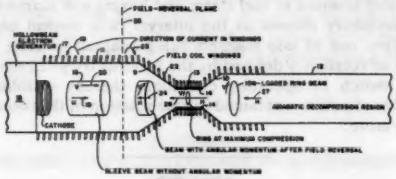
In a transistor radio receiver, two time constant resistors, one of which is a variable resistor, are connected in series via a signal detection circuit to a power source and a time constant capacitor is connected to the junction point of the two resistors to form therewith an automatic gain control voltage generating circuit, and a squelch transistor whose base is connected to the movable terminal of a potentiometer, so that the squelch transistor which is normally biased to be conductive is quickly cut-off in response to even a weak signal input to the receiver.

3,719,893

SYSTEM AND METHOD FOR ACCELERATING CHARGED PARTICLES UTILIZING PULSED HOLLOW BEAM ELECTRONS

David C. dePackh, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 23, 1971, Ser. No. 211,402
Int. Cl. H01j 1/50; H05h 1/00
U.S. Cl. 328—233 4 Claims



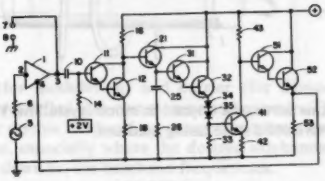
This disclosure is directed to a system for accelerating protons or other positive ions along with acceleration of a hollow beam electron ring. Hollow beam electrons normally have a high tendency to fly apart due to their own space charge; however, the positive charge ions accelerated therewith coupled with organized angular momentum prevents blow-up of the electron rings during acceleration. The magnetic field used for acceleration is particularly shaped so that the ions are not lost and the positive charge ions are accelerated with the electrons.

3,719,894

SYSTEM FOR FEEDING ELECTROMAGNETIC ENERGY INTO A CYCLOTRON AND A CYCLOTRON INCORPORATING SUCH SYSTEM

Pierre P. Delphin, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 19, 1971, Ser. No. 107,788
Claims priority, application France, Jan. 28, 1970, 7002973
Int. Cl. H05h *7/00, 13/00*
U.S. Cl. 328—234 6 Claims



The present invention relates to a system of supporting and electromagnetically connecting the sectoral elements of a cyclotron or D's.

It employs a vertical conducting element rigidly linked to a horizontal metal arm which supports one said sectoral elements; said conducting element passing through the parallel faces of the accelerating enclosure in conical insulators. Said conducting element forms the inner conductor of a transmission line and is equipped at one end with a capacitor means for connection to the high-frequency source, and at the other end with an adaptable short-circuiting stub.

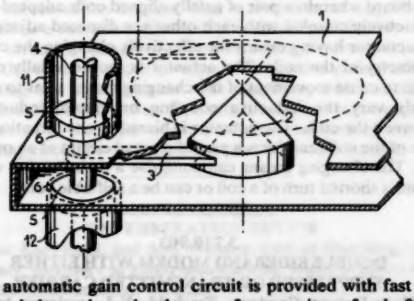
The applications are in the field of circular ion accelerators.

3,719,895

AUTOMATIC GAIN CONTROL CIRCUIT

Patrick David Van der Fuije, Ottawa, Ontario, Canada, assignor to Northern Electric Company, Limited, Montreal, Quebec, Canada

Filed March 11, 1971, Ser. No. 123,142
Int. Cl. H03j *3/30*
U.S. Cl. 330—29 12 Claims



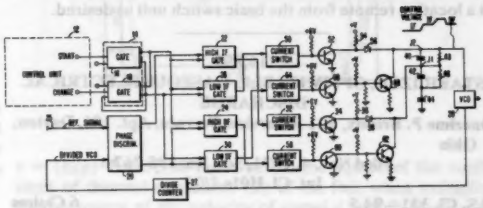
An automatic gain control circuit is provided with fast attack and slow release by the use of a capacitor of only 0.01 microfarads and a slow discharge path through the base-emitter circuits of Darlington-connected transistors. The capacitor is charged through a peak detector transistor circuit that also sets the d.c. reference (no signal) level for the control voltage. A low-level cut-off control circuit is similarly provided with a fast attack and slow release.

3,719,896

PHASE LOCK OSCILLATOR WITH PHASE COMPENSATION CIRCUIT FOR USE IN DATA PROCESSING SYSTEM

Carl P. Holistein, Jr.; Gerald H. Kiltz, and Frank J. Sordello, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 754,883, Aug. 23, 1968, Pat. No. 3,573,640. This application Nov. 13, 1970, Ser. No. 89,533
Int. Cl. H03b *3/04*
U.S. Cl. 331—14 4 Claims



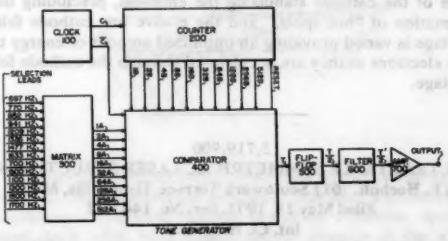
A phase compensation circuit incorporates series capacitors shunted by resistance means, with the signal channeled through the circuit so that there is virtually no loss of D.C. gain.

3,719,897

DIGITAL TONE GENERATOR

Lloyd A. Tarr, Berkeley, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Nov. 26, 1971, Ser. No. 202,472
Int. Cl. H03b *19/12*
U.S. Cl. 331—51 9 Claims



A generator for producing audio tones as used for signaling purposes in telecommunication systems. Selected tones are produced digitally in accordance with preprogrammed digital logic driven by a highly accurate pulse source.

3,719,898

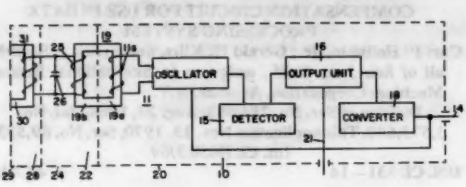
OSCILLATOR PROXIMITY DETECTOR WITH REMOVABLE INTERCHANGEABLE SENSING HEADS

Geoffrey Clarke, Blunsdon, near Swindon, England, assignor to Square D Company, Park Ridge, Ill.

Filed Jan. 22, 1971, Ser. No. 108,915
Claims priority, application Great Britain, March 5, 1970, 10,567/70
Int. Cl. G01v *3/10;* H03b *5/08*
U.S. Cl. 331—65 4 Claims

An electric proximity detector or switch for detecting the presence or absence of electrically conductive objects is pro-

vided with interchangeable sensing heads arranged to be



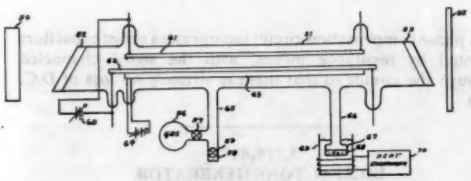
removably mounted on a basic switch unit or to be positioned at a location remote from the basic switch unit as desired.

3,719,899

STABILIZED, OPTIMIZABLE, GASEOUS ELECTRICAL DISCHARGE

Onezime P. Breaux, 821 Riverview Terrace, Apt. 101, Dayton, Ohio

Filed Nov. 4, 1971, Ser. No. 195,762
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **6 Claims**



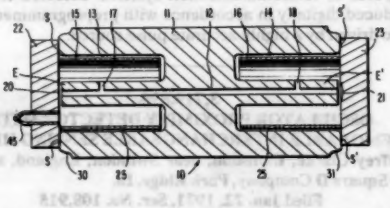
A direct current (DC), transverse discharge, gaseous, slotted hollow cathode laser having an electrically indirectly heated oxidized tungsten, or molybdenum cathode, heated to thermionic emission in the presence of cesium vapor adsorbes cesium atoms and over a defined temperature range thermionic emission occurs in inverse proportion to the temperature of the cathode stabilizing the emission, precluding the formation of "hot spots," and the elative low cathode fall voltage is varied providing an optimized amount of energy to the electrons as they are accelerated through the cathode fall voltage.

3,719,900

ULTRA STABLE SYMMETRICAL LASER STRUCTURES

Urs E. Hochuli, 7011 Southwark Terrace, Hyattsville, Md.

Filed May 19, 1971, Ser. No. 144,972
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 **6 Claims**



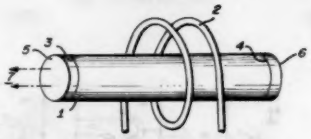
There is disclosed a highly stable symmetrical gas laser structure in which ultra stable materials are used in the fabrication. There is also disclosed a system for minimizing length changes due to temperature variations. A method of adjusting, detuning for example, the frequency is also disclosed.

3,719,901

LASER WITH MONOCRYSTALLINE $YALO_3$:ND^{+3} ACTIVE MEDIUM

Roch R. Monchamp, Waltham; Marvin J. Weber, Wayland, and Michael Bass, Lexington, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 886,617, Dec. 19, 1969, Pat. No. 3,614,662. This application March 12, 1971, Ser. No. 123,635
Int. Cl. H01s *3/16;* **C09k** *1/68*
U.S. Cl. 331—94.5 **12 Claims**



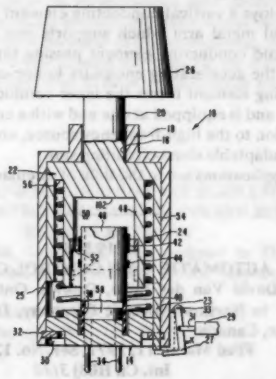
Nd^{+3} ions serve as a dopant in monocrystalline $YAlO_3$ forming an active solid state lasing medium.

3,719,902

KEY SWITCH

Henry N. Esterly, 22321 Cupertino Rd., Cupertino, Calif.

Continuation of Ser. No. 20,351, March 17, 1970, abandoned. This application Jan. 12, 1972, Ser. No. 217,250
Int. Cl. H03b *5/12*
U.S. Cl. 331—117 R **12 Claims**



An improved key switch of the type suitable for use with a keyboard wherein a pair of axially aligned coils adapted to be inductively coupled with each other are disposed adjacent to an actuator having means for effectively changing the circuit geometry of the coils. The actuator is moved axially of the coils to cause movement of the changing means so as to effectively vary the inductive coupling or mutual inductance between the coils. The actuator is biased in one direction and one of the coils can form a part of a tuned circuit of an oscillator. The changing means can comprise a metallic ring which forms a shorted turn of a coil or can be a shiftable core.

3,719,903

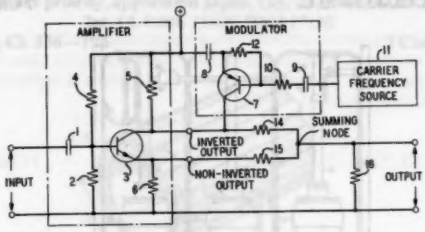
DOUBLE SIDEBAND MODEM WITH EITHER SUPPRESSED OR TRANSMITTED CARRIER

William Eugene Goodson, Freehold, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 25, 1971, Ser. No. 156,843
Int. Cl. H03c *1/52;* **H03d** *1/24*
U.S. Cl. 332—44 **8 Claims**

An inexpensive, two-transistor modem wherein the first transistor is a high gain amplifier connected to receive the

modulating signal, and the second transistor is connected as a shunt modulator driven by a carrier signal source. Individual resistors are connected with the collector and emitter electrodes of the first transistor and so proportioned that the input



baseband (for modulation) and carrier (for demodulation) signals are cancelled at a common summing node. The circuit is useful for double sideband suppressed or transmitted carrier applications, especially where the desired sidebands are very near, or go down to, the baseband frequencies.

3,719,904

CIRCUIT ARRANGEMENT FOR REDUCING SPURIOUS SIGNALS PICKED UP BY TRANSMISSION LINE

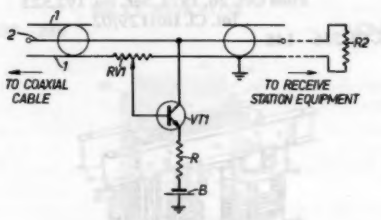
Eric James William Bragg, Harrow, England, assignor to The Post Office, London, England

Filed Sept. 15, 1970, Ser. No. 72,381

Claims priority, application Great Britain, Sept. 19, 1969, 46227/69

Int. Cl. H04b 3/28

U.S. Cl. 333—12 **10 Claims**



This Specification describes circuit arrangements for reducing spurious signals picked up by a coaxial transmission line in which a sample of the signals picked up is derived from the outer screen of the line and after inversion in an amplifier is applied as a current to the central conductor of the line. The outer screen is connected to ground through a potentiometer from the wiper of which an adjustable signal is picked off for effecting the compensation. The amplifier, which includes transistors and may have a field effect transistor input stage, is connected to the wiper of the potentiometer through an a.c. coupling circuit having a time constant of several seconds.

3,719,905

REVERBERATION DEVICE

Walter Karl Kuhl, and Jens Wieking, both of Hamburg, Germany, assignors to Elektromerstechnik Wilhelm Franz KG, Labor/Schwarzwald, Germany

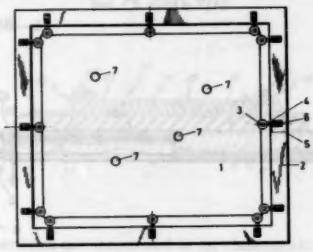
Filed April 27, 1971, Ser. No. 137,840

Claims priority, application Germany, April 29, 1970, P 20 20 897.3

Int. Cl. H03h 9/30

U.S. Cl. 333—30 R **10 Claims**

A reverberation device including a frame having a reverberating metal foil of very small thickness. The metal foil comprises a nearly pure metal having the characteristics of high thermal conductivity (λ) $\geqq$ 69 W/m°, a low coefficient of thermal expansion (α) $\leqq 19.0\times10^{-6}$/°, a low sound velocity



$c = (E/\rho)^{1/2} \leqq 5{,}700$ m/s wherein the square of the coefficient of thermal expansion (α) of the foil, when multiplied by the square of the velocity of sound c and divided by the thermal conductivity (λ) is less than 1.3×10^{-5} m³/°SW.

3,719,906

DISPERSIVE DELAY LINES OPERATING IN THE SHEAR MODE

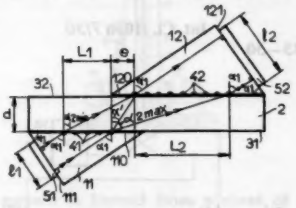
Pierre Tournois, Cagnes-sur-Mer, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 12, 1970, Ser. No. 88,674

Claims priority, application France, Nov. 25, 1969, 6940587

Int. Cl. H03h 7/30

U.S. Cl. 333—30 **20 Claims**



A wave transmission medium has a pair of wave coupling arrays (41, 42) coupled thereto, each including a plurality of rectilinear, co-planar parallel excitation elements, spaced from each other by a predetermined distance a; the wave reception array being located on the transmission medium with respect to the wave transmission array to receive waves at an angle α transmitted into said medium, when a transversely polarized wave is applied to the transmission array, with a direction of oscillations parallel to the co-planar excitation elements; the angle α having a predetermined relation to the wavelength and propagation velocity of waves within the medium.

3,719,907

TORSIONAL WAVE TRANSDUCER

Robert Adler, Northfield, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

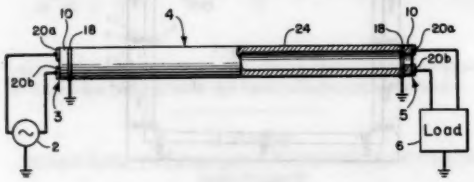
Filed Dec. 3, 1971, Ser. No. 204,484

Int. Cl. H03h 9/30; H01v 7/00

U.S. Cl. 333—30 R **7 Claims**

A torsional-wave transducer is particularly suitable for use with torsional-mode delay lines. The transducer preferably takes the form of a washer-like annular disc of ferro-electric

material which is electrically poled concentrically of the disc in two opposing directions. A unitary electrode is bonded to and overlies one end face of the disc. A pair of spaced driving electrodes are bonded to the opposite end face of the disc. In combination, a torsional-mode delay line in the form of an elongate hollow cylindrical tube has a pair of the transducers



individually bonded to its respective opposite ends by the corresponding single electrodes. To make each transducer, a pair of narrow poling electrodes are first affixed to diametrically opposed locations on the disc, and a DC voltage then is applied across those poling electrodes. The latter are subsequently removed following which the unitary and driving electrodes are bonded in place.

3,719,908

DEVICE FOR CREATING ARTIFICIAL REVERBERATION

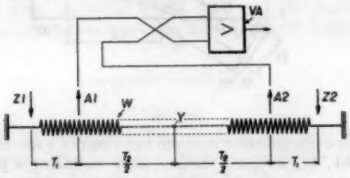
Werner Fidi, Baden near Vienna, Austria, assignor to AKG Akustische Gerate, Nobilegasse, Austria

Filed April 16, 1971, Ser. No. 141,056

Claims priority, application Austria, April 20, 1970, 3582/70

Int. Cl. H03h 7/30

U.S. Cl. 333—30 **13 Claims**



In a device for the creation of artificial reverberation using single or multi-dimensional wave guides with $2n$ input systems and $2m$ pick-up systems, of equal sensitivity, where n and m are any positive integers, the input and pick-up systems are located on an axis of symmetry of the wave guide in symmetrical relation to the other axis of symmetry thereof. The input and pick-up systems may all be located on the same axis of symmetry or they may be located on different axes of symmetry. The signal to be reverberated either is supplied to all the input systems in-phase, with the pick-up systems being connected in pairs in phase operation, or the signal to be reverberated is supplied to the input systems in pairs in phase opposition and all the pick-up systems are connected in-phase. The reverberated signals are supplied, from the pick-up systems, to at least one pick-up amplifier. The wave guide may be a helical spring, constituting a single-dimensional wave guide, or may be a thin plate, constituting a multi-dimensional wave guide.

3,719,909

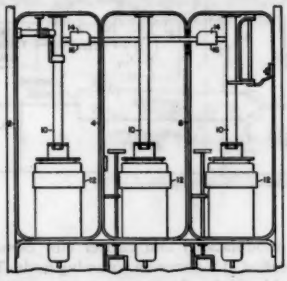
INTER-RESONATOR COUPLING

Herbert Hanft, 1412 Ivanhoe Street, Alexandria, Va.

Filed June 3, 1971, Ser. No. 149,620

Int. Cl. H01p 1/20, 7/04

U.S. Cl. 333—73 C **7 Claims**



In a multi-pole filter the coupling between adjacent cavity resonators is varied in accordance with the distance between the back wall of each cavity and the interconnecting conductor. A section of the interconnecting condutor is so shaped and mounted to assume different spacings from the wall of the cavity according to its rotary postion. Means may be provided for locking the connecting conductor in position to set the desired spacing.

3,719,910

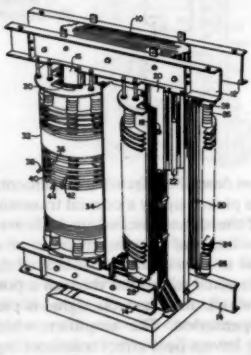
ELECTRICAL INDUCTIVE APPARATUS

Frank W. Golaski, Youngstown, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1971, Ser. No. 192,523

Int. Cl. H01f 29/02

U.S. Cl. 336—146 **1 Claim**



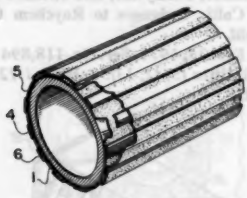
Power transformer having a three section primary winding adaptable to various connection arrangements for providing different voltage ratings. A middle section is axially positioned between two end sections. The middle section has a voltage rating equal to one half of the desired voltage rating range and includes a center-tap terminal. Jumper connections are connected between taps on the winding sections to change the overall voltage rating of the winding. One pattern of connections places all or part of the middle winding section in series and in phase with the other winding sections to increase the voltage rating. Another pattern of connections places all or part of the middle winding section in series and antiphase with the other winding sections to decrease the voltage rating. The middle winding section may be bypassed completely to provide the nominal voltage rating of the transformer winding.

3,719,911

LAMINATED MAGNETIC COIL MATERIALS

Sadami Tomita, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 23, 1970, Ser. No. 83,532
Claims priority, application Japan, Oct. 24, 1969, 44/84717
Int. Cl. C04b 35/00; H01f 27/30
U.S. Cl. 336—196 2 Claims



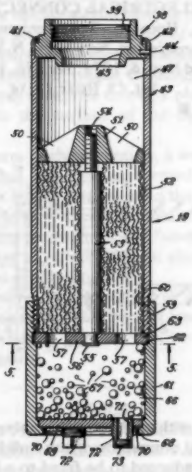
A laminated magnetic material composed of thin rolled sheet of magnetic alloy having a thickness of less than 25 microns and a glassy material formed on at least one surface of the thin rolled sheet of magnetic alloy, wherein the sheet of magnetic alloy and the glassy material are wound and laminated alternately and each of the layers of magnetic alloy is secured to the adjacent layer interposed by an electric insulator.

3,719,912

EXHAUST CONTROL DEVICE FOR CIRCUIT INTERRUPTING DEVICES

Robert H. Harner, Park Ridge; Otto Meister, Glenview, and Robert E. Owen, Chicago, all of Ill., assignors to S. C. Electric Company, Chicago, Ill.

Filed Oct. 26, 1971, Ser. No. 192,238
Int. Cl. H01h 85/38
U.S. Cl. 337—280 3 Claims



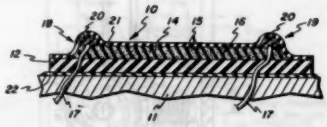
A mass of small diameter ceramic pellets, for example of activated alumina, is located in a cylindrical metallic housing between its closed end and metallic heat absorbent material in the housing through the open end of which flow arc products incident to blowing of a fuse or similar circuit interrupting device. An apertured deflector disc overlies the pellets and prevents bypassing thereof along the inner surface of the housing. One or more metallic filter elements in the closed end of the housing place the interior thereof in limited communication with the atmosphere.

3,719,913

VISCOUS STRAIN GAGE

Charles R. DuBose, and Harvey A. Jessup, both of Waco, Tex., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed May 2, 1969, Ser. No. 821,208
Int. Cl. G01b 7/18
U.S. Cl. 338—2 4 Claims



Metal particles are suspended in an elastomeric compound to produce a conductive strain gage element capable of high elongation which responds with electric signals proportionate to the strain being measured, which strain element is mounted on an elastomeric carrier and encapsulated in a rubbery mass for protection.

3,719,914

RESISTANCE STANDARD

Carl R. Scharle, Glenside, Pa., assignor to James G. Biddle Company, Plymouth Meeting, Pa.

Filed Dec. 30, 1971, Ser. No. 213,940
Int. Cl. H01c 3/02
U.S. Cl. 338—61 14 Claims

A zig-zag pattern is formed from a sheet of resistance material, such as manganin or a nickel chrome alloy, preferably by providing parallel slots alternately extending from opposite edges of the sheet and evenly spaced from one another and the patterned sheet is folded back upon itself and separated by sheets of insulating material so that the patterned areas of the opposed folded portions are superimposed upon one another and current flowing through the resistance pattern will be flowing in opposite directions on opposite sides of the insulating material, thus cancelling out inductive effects and providing a resistance standard with an essentially pure resistance characteristic.

3,719,915

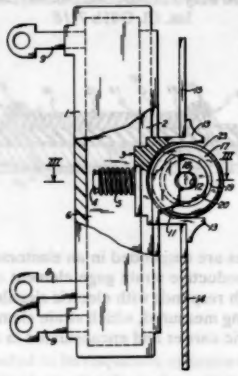
COARSE AND FINE ADJUSTMENT POTENTIOMETER

Mogens W. Bang, Bakkedraget, Denmark, assignor to Stackpole Carbon Company, St. Marys, Pa.

Filed May 22, 1972, Ser. No. 255,588
Int. Cl. H01c 9/02
U.S. Cl. 338—183 6 Claims

The front wall of a linear motion potentiometer case has a longitudinal slot in it, in which is disposed a slide that carries a bridging contact in sliding engagement with resistance and collector elements inside the case. The slide has laterally

spaced side walls projecting forward from the slot and provided with a pair of opposed transverse openings elongated forward and receiving the hubs of a wheel fitting between the walls. The wheel is encircled by a friction ring and the hubs



are movable rearwardly in the wall openings by finger pressure applied to the front portion of the ring to press it against the case at the opposite edges of the slot so that the ring will roll along the case when the ring is rotated and carry the slide with it.

3,719,916

SLIP-RING ARRANGEMENT ESPECIALLY FOR BRAKE SLIPPAGE CONTROL INSTALLATIONS OF MOTOR VEHICLES

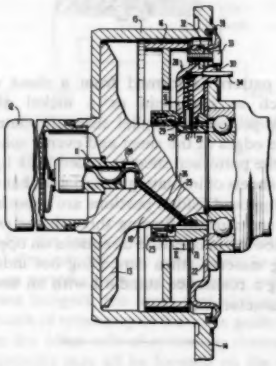
Otto Worner, Reutlingen; Franz Brugger, and Erwin Weller, both of Stuttgart, all of Germany, assignors to Daimler Beng Aktiengesellschaft, Stuttgart-Unterukheim, Germany

Filed Sept. 3, 1971, Ser. No. 177,649

Claims priority, application Germany, Sept. 4, 1970, P 20 43 841.9

Int. Cl. H01r *39/00*

U.S. Cl. 339—3 R **19 Claims**



A slip-ring arrangement, intended especially for brake force control systems in motor vehicles, for the transmission of electrical signals from a rotating part to a stationary part whereby a signal transmitter is arranged at the rotating part and is connected by way of a line with a slip-ring disposed on the wheel hub on the inside of the brake; one of several stationary brushes slide on the slip-ring whereby the slip-ring itself is arranged on the wheel hub exclusively on the inside of a sealed-off space and is connected with the signal transmitter by way of a cable on the inside of the wheel hub while the brush or brushes are secured at the brake carrier with the aid of a one-piece plastic part which simultaneously contains means for guiding the cable.

3,719,917

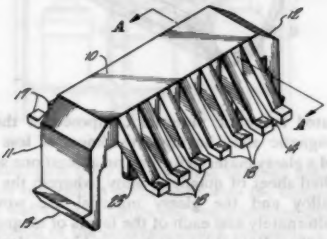
CLAMPING DEVICE FOR PRINTED CIRCUITS

Christopher L. Fischer, Sunnyvale, and Richard F. Otte, Los Altos, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Feb. 25, 1971, Ser. No. 118,894

Int. Cl. H01r *13/42, 13/54;* **H05k** *1/12*

U.S. Cl. 339—17 CF **7 Claims**



Described herein are clamping devices for releasably securing lead-bearing integrated circuit modules to printed circuit boards. The devices of the invention are chqracterized by oppositely disposed pluralities of resilient legs pendent from a body portion provided with circuit board latching means. The plural legs of the device individually engage the individual leads of the module and, acting against the said latching means, urge the module leads into electrical contact with conductors carried by the board.

3,719,918

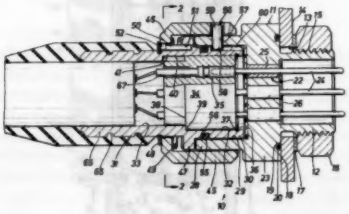
ELECTRICAL CONNECTOR

Wayne L. Kerr, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 4, 1971, Ser. No. 195,546

Int. Cl. H01r *13/54*

U.S. Cl. 339—90 R **13 Claims**

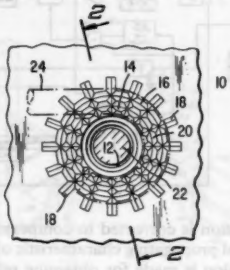


In accordance with an illustrative embodiment of this invention, an electrical connector of the bulkhead type includes a receptacle body adapted to be fixed to a bulkhead and carrying pin contacts with glass seal insulation, a connector body carrying the pin sockets and having an annular end section that sealingly fits within a companion end section of the receptacle body, a locator pin extending radially through the wall of the receptacle body end section so that an inward portion thereof fits within an external groove of the connector body end section to rotationally align the pins and sockets, and a locking sleeve rotatably mounted on the connector body and having a bayonet slot that engages the outward portion of the locator pin to couple the receptacle and connector bodies together.

3,719,919
CONNECTOR FOR USE WITH OXIDE COATED CONDUCTORS

Julius F. Tibolla, Yardley, Pa., assignor to Circle F. Industries, Inc., Trenton, N.J.

Filed June 4, 1971, Ser. No. 149,921
Int. Cl. H01n 9/08
U.S. Cl. 339—95 A **10 Claims**



A method and apparatus are herein provided for making electrical connections using oxide coated conductors. A binding plate may be provided having an array of ridges formed thereon which ridges define at least one pocket. A binding device, e.g., a screw or the like, cooperates with the binding plate to urge a conductor against the binding plate until the ridges on the binding plate fracture the oxide coating on the conductor and penetrate the virgin metal thereof. The array of ridges is sized so that the ridges defining and completely surrounding at least one pocket will penetrate the virgin metal so as to form a gas-tight space between the binding plate and the conductor. The ridges may be formed as sharp cutting projections for fracturing the oxide and for facilitating the penetration of the virgin metal. Alternatively, the ridges may merely comprise the edges defining each pocket, which edges need not extend above the surface of the binding plate.

In one form of the invention, the array of ridges may define concentric circles disposed about a binding post and intersected by radially extending ridges. In another form of the invention, the array may comprise one or a plurality of indentations machined into the surface of the binding plate by a punch or the like.

In still another form of the invention, a washer may be provided having at least one pocket formed in a radial face thereof. The washer is disposed between the binding plate and a binding device which is then operable to urge the washer against the conductor to perform the functions of fracturing the oxide coating and of establishing an electrical connection with the virgin metal of the conductor.

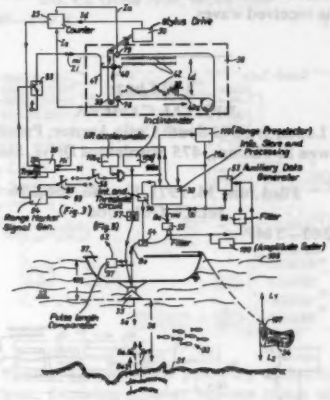
In any form, however, each pocket is defined by a ridge which completely surrounds that pocket, and which is sized to define an opening which is completely covered by a conductor when urged thereagainst.

3,719,920
METHOD AND APPARATUS FOR DISPLAYING AND/OR RECORDING MEASURED VALUES

Walter Grada; Heinz Purnhagen, both of Bremen, Germany; Gunter Schnell, Struer, Denmark, and Wolfgang Stedtnitz, Neukrug, Germany, assignors to Fried Krupp Gesellschaft mit beschraenkter Haftung, Essen, Germany

Filed May 18, 1971, Ser. No. 144,539
Claims priority, application Germany, May 25, 1970, P 20 25 405.1
Int. Cl. G01s 9/68
U.S. Cl. 340—3 R **82 Claims**

A method and apparatus for compiling, evaluating and displaying measured values which are dependent on a given independent variable obtained during a measuring period within a sequence of measuring periods whereby the display may take place at a time and location other than when the measured values are obtained and at a speed independent of the measuring speed. The measured values are, preferably after quantizing, stored in a memory with an identifying or address indica-

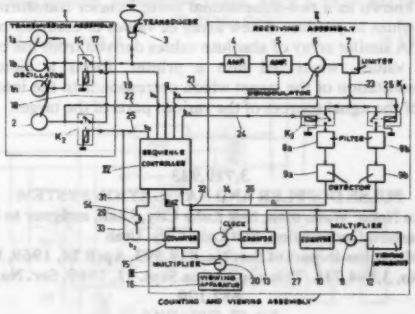


tion for each value and the information is read out for display, starting at any point in time with respect to the measuring period, by correlating the identifying or address indication with a location indication for the display mechanism so as to synchronize the timing read out of a particular measurement with the display location associated with such measurement.

3,719,921
METHOD BASED ON THE DOPPLER EFFECT FOR DETERMINING THE DISTANCES TRAVELLED OVER BY A VEHICLE AND DEVICE FOR PRACTISING SAID METHOD

Jean Pierre Barret, Chambourcy; Max Monnot, Chatou, and Jacques Trognee, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmaison, France

Filed Jan. 28, 1971, Ser. No. 110,554
Claims priority, application France, Feb. 2, 1970, 7003645
Int. Cl. G01s 9/66
U.S. Cl. 340—3 D **18 Claims**



Method for determining the distance travelled over by a vehicle with respect to a reference surface, comprising transmitting towards said surface, in an inclined direction with respect to a vertical line, sequences of *n* wave trains of a con-

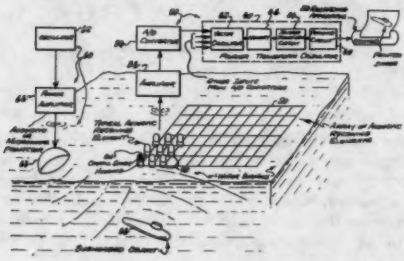
stant length and with a recurrence period of two successive transmission sequences in a constant ratio with the transmission time of a sequence, irrespective of the value of *n*, receiving the waves diffused back from said surface during a reception stage at which the transmission is interrupted, the length of said reception stage depending on the value of *n*, and determining the distance travelled over on the basis of the difference between the frequency of the transmitted waves and that of the received waves.

3,719,922

DIGITAL CAMERA

Louis A. Lopes, Jr., 342 South Craig Avenue, Pasadena, Calif., and Owen F. Thomas, 475 Sturdevant Drive, Sierra Madre, Calif.

Filed June 24, 1971, Ser. No. 156,256
Int. Cl. G01s 9/66
U.S. Cl. 340—5 MP **14 Claims**



A digital camera capable of forming a picture of pattern of objects either radiating or reflecting energy, which includes an oscillator which can generate a ping-type or continuous-wave signal, which may be amplified and if the target is not self-radiant, transmitted to a stationary illuminator, which "illuminates" the target. The target reflects or radiates energy to a rectangular array or matrix of transducer elements, each of which corresponds to an element of the object observed, and each of which is connected to an analog-to-digital converter and then to a digital computer, or to logical circuitry arranged to form a digital computation. The computer determines the phase and amplitude from each element at a frequency of interest, stores the values in an ordered array corresponding to the transducer array, and performs the mathematical operation known as a two-dimensional finite Fourier transform on the values to produce a new array of values in complex notation. A similar array of absolute values derived from the complex values, when fed into a printer, forms a pictorial representation of the target which corresponds to the intensities of the signal sources of the various parts of the target.

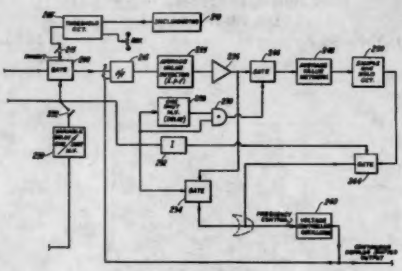
3,719,923

PULSE DOPPLER AND NAVIGATION SYSTEM

Glenn Noble Waterman, Salt Lake City, Utah, assignor to Edo Western Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 818,893, April 24, 1969, Pat. No. 3,594,716. This application Sept. 11, 1969, Ser. No. 857,170
Int. Cl. G01s 9/66
U.S. Cl. 340—3 D **35 Claims**

A vessel navigation system employs gated transmitting and receiving transducers for developing pulsed Doppler frequency shifted signals indicative of velocity components along selected orthogonal axes. Gated feedback arrangements are employed to produce continuous oscillations having the same frequency as the Doppler shifted signals. The signals are converted to digital form, and processed to yield, inter alia, velocity, drift angle, and distance information.



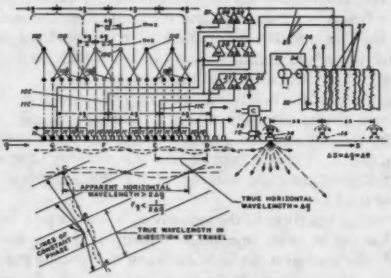
The information is corrected to compensate for variations in the acoustical propagating characteristic of the ocean medium, and provision is made for obtaining reliable data under severe rolling conditions.

3,719,924

ANTI-ALIASING OF SPATIAL FREQUENCIES BY GEOPHONE AND SOURCE PLACEMENT

Francis Muir, Huntington Beach, and Jerry L. Morrison, Hacienda Heights, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sept. 3, 1971, Ser. No. 177,723
Int. Cl. G01v 1/16, 1/28
U.S. Cl. 340—15.5 AF **16 Claims**



In the generation, recording, and processing of seismic wave data, coherent noise waves of higher spatial frequencies (shorter wave lengths) than those in the desired and useful spatial frequency pass band tend to "alias" down into the desired pass band and to produce interfering effects. This disclosure tells how improved arrays of sources and receivers may be designed and used that, instead of attempting to suppress all spatial frequencies higher than those in the desired pass band, suppress preferentially only those particular, higher spatial frequencies that would alias back into the desired pass band.

3,719,925

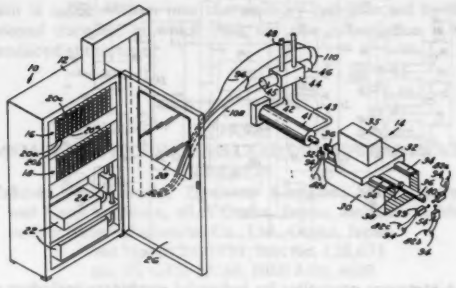
ELECTRONIC CONTROL FOR MACHINE TOOLS AND THE LIKE

Angelo N. Vinch, Warren, Mich., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 11, 1971, Ser. No. 114,504
Int. Cl. H04q 9/00
U.S. Cl. 340—147 P **5 Claims**

An electronic control having a plurality of electronic circuit cards for controlling the operation of various elements of a

machine in accordance with commands received from transducers such as limit switches on the machine. One or more interface circuit cards receive AC signals from the transducers on the machine and convert these signals to DC output signals which are in turn supplied to a control card. The control card comprises a DC logic circuit which is responsive to the DC signals supplied by the interface cards to provide a DC control signal. The control card further includes a DC-AC converter which is responsive exclusively to the DC control signal for



supplying an AC control signal to an electromechanical control device for controlling the particular operation of a particular machine element with which that control card is associated. Because this electromechanical control device is responsive only to this particular AC control signal, the entire logic circuitry for controlling that particular operation of that particular machine element is contained on a single circuit card. The circuit cards are also provided with indicating lamps which display the electrical status of the control to facilitate trouble shooting whenever there is a malfunction.

3,719,926

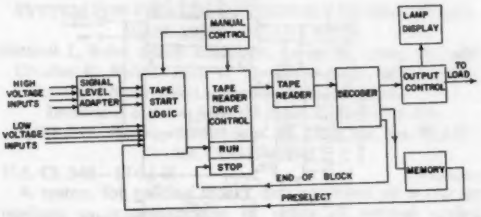
TAPE PROGRAM CONTROL

Arlon G. Sangster; Charles B. Pickering, both of Sterling, and Thomas J. McNamara, Auburn, all of Mass., assignors to Jamesbury Corp., Worcester, Mass.

Continuation of Ser. No. 783,866, Dec. 16, 1968, abandoned. This application March 1, 1971, Ser. No. 119,888

Int. Cl. H04q *3/04*

U.S. Cl. 340—147 P **3 Claims**



A control device for sequential control of a process or machine which includes a means for reading perforated tape having thereon codes representative of alphabetic, numerical or any other symbols. The control includes means to interpret these codes and means to respond to these codes to either energize or de-energize a plurality of outputs, means to further condition the control to accept only selected input signals appearing on a plurality of input terminals, and means to operate the reading means only in response to a preselected input signal.

3,719,927

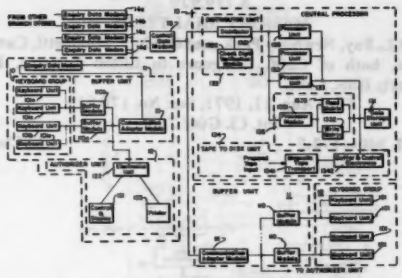
CREDIT CONTROL SYSTEM

Lawrence S. Michels, Palos Verdes Peninsula; George F. Minka, Torrance; Donald G. Kovar, Palos Verdes Peninsula, and Robert V. Harper, Harbor City, all of Calif., assignors to TRW Data Systems, Inc., Torrance, Calif.

Filed Dec. 28, 1970, Ser. No. 101,712

Int. Cl. G06k *5/00*; **H04q** *5/00*

U.S. Cl. 340—149 R **11 Claims**



A credit control system which positively authorizes every credit purchase, furnishes account balance status and accumulates the dollar amount of every credit purchase. Customer account numbers, status, credit limit and account balance are stored in a magnetic memory. Remote keyboard units interrogate the memory as to account number and amount of purchase for each purchaser. If the status of the account is valid and there is a positive credit balance, a credit authorization signal is received at the remote keyboard unit. If the status of the account is invalid, or if the status of the account is valid and the credit balance is negative, a credit denial signal is received at the remote keyboard unit, and a credit authorizer unit is activated. The credit authorizer unit permits manual electronic inspection of the credit file of interest to determine if credit should be authorized for the current transaction. If credit is to be authorized, or denied, a credit authorization, or denial signal is received at the remote keyboard unit.

3,719,928

SWEEP SIGNAL METER READING SYSTEM

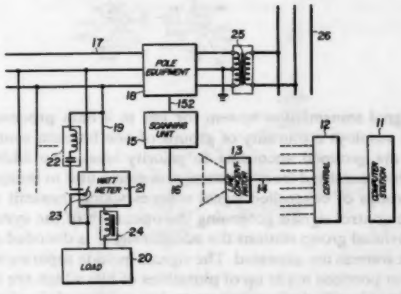
Hiroshi Oishi; Fumio Aoki, both of Yokohama, Kohoku-ku; Shigeru Kawanno, Mito-shi; Yasushi Kudo, Kamakura-shi; Hideo Kobayashi, Yokohama, Totsuka-ku, and Takeo Hyodo, Kamakura-shi, all of Japan, assignors to Hitachi, Ltd. and The Tokyo Electric Power Co., Tokyo, Japan

Filed Feb. 10, 1971, Ser. No. 114,211

Claims priority, application Japan, April 3, 1970, 45/28451

Int. Cl. H04q *9/00*

U.S. Cl. 340—151 R **5 Claims**



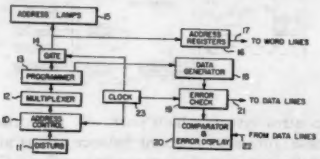
An information detection method and system for carrying out the automatic reading of meters disposed in domestic

users houses. A series resonance circuit having a peculiar resonance frequency is connected in parallel to each meter and on-off controlled by the meter at certain quantity of consumption. A sweep oscillator generates a sweep signal and supplied it through hybrid circuits to the resonance circuit, the hybrid circuits mixing the sweep signal and the reflected signal to provide a detection signal with no noise. Such a detection signal is allowed to pass through a gate which is controlled by the sweep signal and reference resonance circuits.

3,719,929
MEMORY ANALYZERS

Robert L. Fay, Newbury Park, and Guido F. Simonetti, Canoga Park, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Aug. 11, 1971, Ser. No. 170,819
Int. Cl. G06f 7/06
U.S. Cl. 340—172.5 **23 Claims**

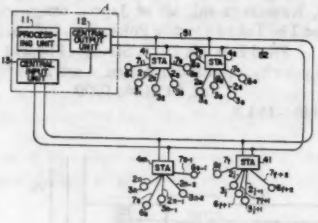


A memory analyzer is provided with a disturb mode for selectively writing complemented test data into a computer memory. The writing operation is repeated a number of times, for example, 5,000 write cycles, and the data is thereafter read out and compared to the original data to detect errors. Hence, the effect of repeated write operations in selected locations on data in non-selected locations can be determined. One feature resides in the provision of a "B increments A" mode whereby access to an A address register is incremented upon each cycle of access to a B address register.

3,719,930
ONE-BIT DATA TRANSMISSION SYSTEM

Minoru Horoshima, Kokubunji-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed March 25, 1971, Ser. No. 127,939
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 **22 Claims**

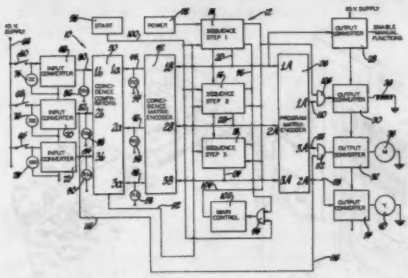


A signal transmission system for use in a data processing system employs a plurality of groups of one-bit data sources which are grouped according to priority levels. An address signal is transmitted from a central processing unit to independent groups of controlled signal sources which transmit and receive control signals governing the operation of the system. At individual group stations the address signal is decoded and one-bit sources are accessed. The signals include separate segments or portions made up of pluralities of bits which are employed to identify desired interrupts. bit position of signal portions unnecessary for information transmission are employed to identify the respective one-bit sources requesting interrupt.

3,719,931
APPARATUS FOR CONTROLLING MACHINE FUNCTIONS

Roger L. Schroeder, Springfield, Vt., assignor to Bryant Grinder Corporation, Springfield, Vt.

Filed April 29, 1971, Ser. No. 138,512
Int. Cl. G06f 15/46
U.S. Cl. 340—172.5 **28 Claims**

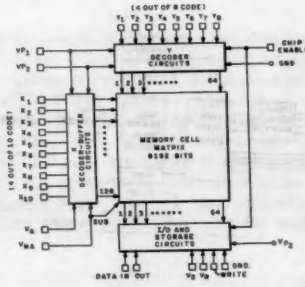


A sequence controller for industrial machinery including a solid state sequencer operating as a logical stepping switch, a pair of programmable matrices for creating output signal combinations of selected permutations in response to sequencer outputs, one matrix being arranged to effect machine functions and the other being arranged to effect inputs to a comparator indicating machine requirements which are due. The comparator is connected to receive corresponding signals from the machine when the conditions are met and then to advance the sequencer. Paired lights on a control-display panel indicate the machine status during a sequence. Logical interlocks are provided to inhibit certain functions in the programmed sequence until certain other functions have been accomplished.

3,719,932
BIT ORGANIZED INTEGRATED MNOS MEMORY CIRCUIT WITH DYNAMIC DECODING AND STORE-RESTORE CIRCUITRY

Arthur M. Cappon, Boston, Mass., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed April 27, 1972, Ser. No. 247,977
Int. Cl. G11c 11/40
U.S. Cl. 340—173 R **7 Claims**



A digital memory employing a matrix of known variable threshold transistor memory cells arranged in rows and columns. A first address decoder includes a push-pull output which applies an addressed voltage to the gates of transistors in the addressed row of memory cells and a not-addressed voltage to the remaining rows. A second address decoder operates through I/O and storage circuits to permit a single bit of information to be read into or out of the addressed memory cell in a selected column. The memory operates in a five-

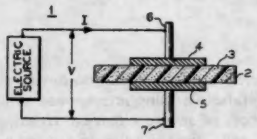
phase operating cycle. During the first and second phases, appropriate voltages are applied to the gate electrodes of the addressed and non-addressed rows of memory cells and all source and drain lines in the matrix are charged through the I/O and storage circuits. During the third phase, information in each memory cell in the addressed row is read into a temporary storage transistor in the I/O and storage circuits. During the fourth phase, all memory cells in the addressed row are cleared. During the fifth phase, information is re-written into each memory cell from the corresponding temporary storage transistor in the I/O and storage circuits unless new information is to be written into the memory cell selected by the second decoder, in which case the new information is introduced at this time.

3,719,933

MEMORY DEVICE HAVING LEAD DIOXIDE PARTICLES THEREIN

Takashi Wakabayashi; Terukazu Kinugasa; Shiro Hozumi, and Kanji Sugihara, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed March 29, 1971, Ser. No. 128,671
Int. Cl. G11c *11/46*; H01l *3/00, 9/00*
U.S. Cl. 340—173 TP **11 Claims**



A memory device for memorizing an electric signal. Said memory device has an organic resin film having lead dioxide particles dispersed therein, a positive electrode, and a negative electrode. The memory device has a high electrical resistance state and a low electrical resistance state. An applied electric signal at a critical voltage and with forward polarity can transform the memory device from the high electrical resistance state to the low electrical resistance state. An applied electric erasing signal at a pre-determined voltage with reverse polarity can return the memory device from the low electrical resistance state to the high electrical resistance state.

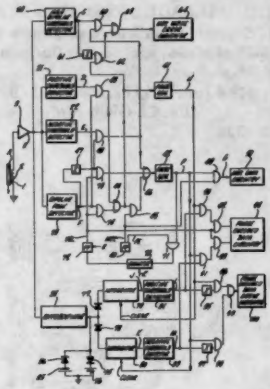
3,719,934

SYSTEM FOR PROCESSING SIGNALS HAVING PEAKS INDICATING BINARY DATA

Michael I. Behr, South Pasadena, Lewis B. Coon, Jr., and Charles E. Bickel, both of Thousand Oaks, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 668,529, Sept. 8, 1967, Pat. No. 3,581,297. This application Sept. 28, 1970, Ser. No. 75,835
Int. Cl. G11b *5/04*
U.S. Cl. 340—174.1 H **9 Claims**

A system for reading binary data recorded on a storage medium as magnetic tape in either of several coding techniques. Specifically, the system is capable of reading either phase encoded data or data recorded in the form of nonreturn-to-zero pulses in which one binary value is represented by a flux reversal in a bit cell and the other binary value is represented by the absence of a flux reversal in a bit cell (hereafter called modified NRZ). A positive threshold detector, a negative threshold detector, and a bipolar peak detector are utilized for recovering the NRZ data and part of the preamble of the phase encoded data. The bipolar peak detector is also employed in the recovery of the phase encoded data itself. To recover the NRZ data and the preamble of the phase encoded data, the output of the positive threshold detector and the bipolar peak detector are combined in one AND circuit and the output of the negative threshold detector and the inverse output of the bipolar peak detector are combined in another AND circuit. To recover the phase encoded data, an excursion indicating signal representing the peak-to-peak amplitude of the read head signal is produced by differentiating it and then separately integrating the two half cycles of the differentiated signal. The maximum amplitude of the differentiated signal is limited to suppress noise. The integrated



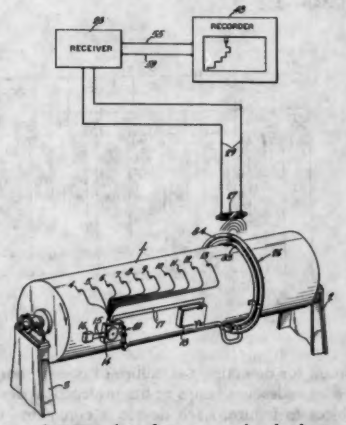
signals are applied to a positive threshold detector and a negative threshold detector, respectively. The output of the positive threshold detector is combined with the output of the bipolar peak detector in one AND circuit and the output of the negative threshold detector is combined with the inverse of the output of the bipolar peak detector in another AND circuit to recover the phase encoded data. To check for errors in the phase encoded data, these outputs are switched and applied to two other AND circuits.

3,719,935

TELEMETERING SYSTEM FOR ROTATING BODY

Preston E. Chaney, Dallas, and Charles F. Rhodes, Jr., Richardson, both of Tex., assignors to Sun Oil Company, Philadelphia, Pa.

Filed Oct. 22, 1969, Ser. No. 868,398
Int. Cl. G08c *19/22*
U.S. Cl. 340—206 **4 Claims**



In order to telemeter data from a moving body to a fixed recorder, a unidirectional voltage representing the data is con-

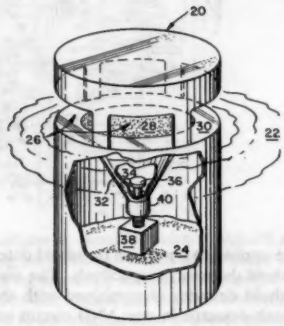
verted by means of circuitry to frequency modulated pulses which are fed to a transmitting coil which sets up an induction magnetic field; the circuitry and the coil are both mounted on the moving body. A fixed recording system includes a receiver having an antenna located in the induction field of the transmitting coil. The receiver converts the pulses picked up to a unidirectional voltage which provides the input for the recorder.

3,719,936

OIL SPILLAGE DETECTION SYSTEM

Ruthven H. Daniels, Lynnfield, and Joseph G. Zahka, West Newton, both of Mass., assignors to Durham Associates, Inc., Lynnfield, Mass.

Filed June 1, 1971, Ser. No. 148,640
Int. Cl. G08b 21/00
U.S. Cl. 340—236 **13 Claims**



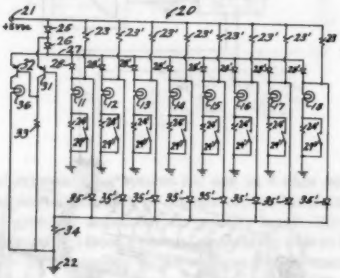
A system for the detection of oil spillage on water includes a housing adapted to be disposed in a partially submerged buoyant state in a body of water and having a selectively transmissive member for transmission of oil to a chamber which includes a sensor for detecting the presence of oil therein and for providing an output indication of oil presence.

3,719,937

FAILURE DETECTION CIRCUIT

James H. Doyle, Orange, Calif., assignor to Master Specialties Company, Costa Mesa, Calif.

Continuation-in-part of Ser. No. 44,122, June 8, 1970, abandoned. This application Feb. 11, 1971, Ser. No. 114,580
Int. Cl. G08b 21/00
U.S. Cl. 340—251 **12 Claims**



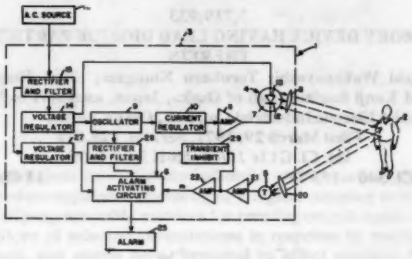
A circuit for detecting the failure of one or more of a plurality of incandescent lamps or other electrical devices which are subject to failure. Each device is connected to a power source such that a predetermined low current flows through each good device. The current in each device is normally appreciably lower than the current required to energize the device. A circuit including an isolation diode also connects each device to a common terminal. The voltage on the common terminal changes in the event of a failure of any of the devices causing a current decrease in such device. A voltage change on the common terminal operates an electronic switch to energize an alarm or indicator, such as a warning lamp.

3,719,938

PHOTOELECTRIC INTRUDER DETECTION DEVICE

David E. Perlman, 59 Stoneham Drive, Rochester, N.Y.

Filed Dec. 15, 1970, Ser. No. 98,355
Int. Cl. G08b 13/00
U.S. Cl. 340—258 B **2 Claims**



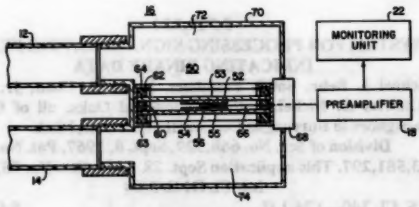
A photoelectric intruder detection device including means for preventing false alarming in response to lightning flashes and other sources of severe electrical transients. Circuitry is provided for totally disabling the device for a predetermined time following the occurrence of such transients to permit the intruder detecting circuitry to stabilize.

3,719,939

DIFFERENTIAL PRESSURE TRANSDUCER

Fred G. Gell, Pittsburgh, and William K. Dunsworth, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 9, 1971, Ser. No. 113,999
Int. Cl. G08b 13/10
U.S. Cl. 340—261 **8 Claims**



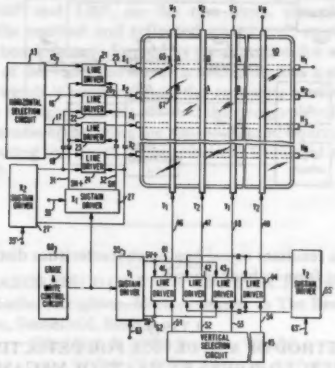
The invention relates to a differential pressure transducer employing two spaced apart flexible diaphragm elements, a deflection responsive electrical transducer, such as a piezoelectric crystal, operatively connected to at least one of the diaphragm elements, and a rigid spacer extending between the adjacent surfaces of the diaphragm elements to assure uniform displacement of the diaphragms in response to differential pressures applied to the remote surfaces of the diaphragm elements. Furthermore the rigid spacer prevents deformations of the diaphragm elements resulting from an increase in static pressure conditions existing at the remote surfaces of the diaphragm elements thereby providing inherent zero balance of the differential pressure transducer.

3,719,940

GAS DISPLAY PANEL DYNAMIC HONEYCOMB

Frank M. Lay, Woodstock, and Allen W. McDowell, Kingston, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,238
Int. Cl. H05b 41/02
U.S. Cl. 340—324 R 7 Claims



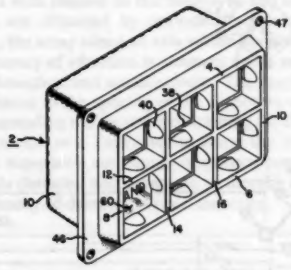
A plasma display panel has horizontal and vertical orthogonal drive lines disposed on opposite sides of a gas filled envelope. To achieve higher resolution in the plasma display panel and prevent cell to cell interaction during operation in the sustain or addressing mode, the horizontal and vertical drive signals applied to adjacent cells are phase separated such that adjacent cells are energized at different time intervals to isolate cell to cell interaction and thus provide a honeycomb effect.

3,719,941

PANEL DISPLAY DEVICE HAVING UNITARY MOLDED CASING

James W. Dickey, and John B. Youngblood, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed July 28, 1971, Ser. No. 166,738
Int. Cl. G08b 5/00, 5/22, 5/36
U.S. Cl. 340—381 R 7 Claims



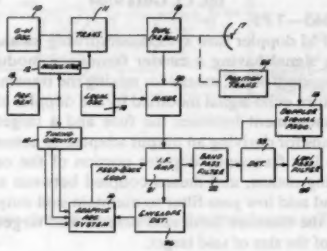
A panel mounted display device having a unitary molded casing whose exterior and interior sidewalls define a plurality of compartments and whose rear wall contains access apertures. The sidewalls of each compartment have a lower portion terminating abruptly into an upper recessed portion. Indicia bearing disks are seated on the flange surfaces thus formed and are rigidly retained by integral protrusions extending into the compartments from the upper portions of the sidewalls. The upper portions of the sidewalls form shields about the individual compartments.

3,719,942

ADAPTIVE AUTOMATIC GAIN CONTROL FOR RADAR SYSTEMS

Elvin E. Herman, Pacific Palisades, and Michael R. O'Sullivan, Palos Verdes Peninsula, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 30, 1970, Ser. No. 76,847
Int. Cl. G01s 9/02
U.S. Cl. 343—7 A 9 Claims



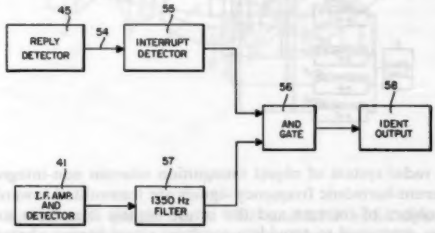
An adaptive automatic gain control (AGC) system (also referred to as an adaptive sensitivity time control) is disclosed for pulsed radar applications to reduce the input dynamic range requirements to a doppler signal processor by forming a "running average" of a video signal along a range sweep over a succession of range bins and forming a "running average" over corresponding range elements of a large number of successive sweeps, where an element comprises one or more range bins. The resulting "running average" which constitutes a control function with a high degree of sweep-to-sweep stability because of the large amount of averaging is fed forward or back to an IF or other amplifier for gain control thereof.

3,719,943

SELECTIVE IDENTITY SYSTEM

Alexander Rufus Applegarth, Plymouth Meeting, Pa., assignor to Aradar Corporation, Plymouth Meeting, Pa.

Filed Feb. 18, 1971, Ser. No. 116,523
Int. Cl. G01s 9/56
U.S. Cl. 343—7.3 4 Claims



An improvement for aircraft DME equipment is disclosed, comprising electronic circuitry for selective identity of the DME station being tracked, and a method for providing such selective identity. The received identity signals are gated with an interrupt signal derived from the reply pulse detector, which interrupt signal carries information as to when the tracked ground station interrupts its replys to transmit its identity signals. Only those identity signals which coincide with interruption of reply signals are passed through the gate, such that other undesired identity signals are blocked, thereby avoiding ambiguity caused by simultaneous receipt of identity signals from other ground stations. The gated identity signal is connected to an audio device to produce a sound output. Alternatively, the interrupt signal may be connected directly to a

separate audio signal generator, which generator produces audio signals corresponding to the identity signals of the tracked ground station.

3,719,944

ABSOLUTE RANGE FUZE SYSTEM USING LIMITING OR AGC

Donald J. Adrian, Arlington, Calif., assignor to The United States Government represented by the Secretary of the Navy

Filed March 11, 1957, Ser. No. 645,385
Int. Cl. G01s 9/04
U.S. Cl. 343—7 PF **3 Claims**

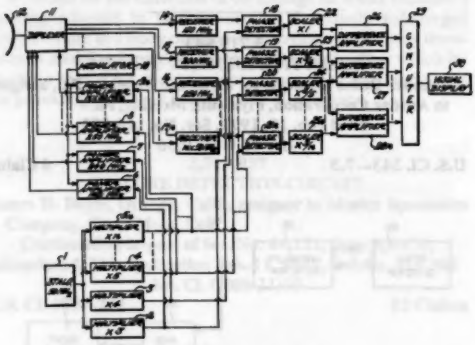
1. An FM doppler fuze system comprising means for transmitting a signal having a carrier frequency modulated by a band of random noise, means for mixing the transmitted signal with a return echo signal modified by the doppler effect of the relative movement between the fuze and a target, low pass filter means for deriving an output adapted to actuate the fuze from the low frequency doppler portion of the output from said mixing means, and means coupled between said mixing means and said low pass filter to maintain said output proportional to the distance from said fuze to said target and independent of the size of said target.

3,719,945

NON-INTEGRAL RADAR PHASE COMPARISON SYSTEM FOR OBJECT RECOGNITION

Carlyle J. Sletten, Acton; William B. Goggins, Jr., Winchester, and Philipp Blacksmith, Concord, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force

Filed , Ser. No. 795,776
Int. Cl. G01s 9/02
U.S. Cl. 343—5 SA **4 Claims**



A radar system of object recognition wherein non-integral coherent-harmonic frequency signals are transmitted towards the object of interest and the return signals therefrom are phase compared to provide a resultant signal having characteristics distinguishing the object from its background.

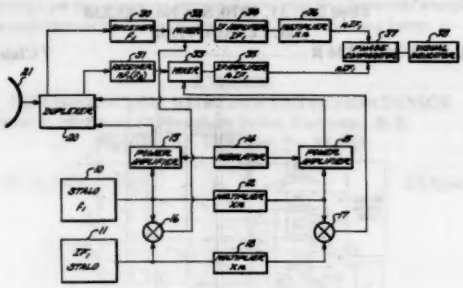
3,719,946

RADAR PHASE COMPARISON SYSTEM INCLUDING A SUPERHETRODYNE RECEIVER

Carlyle J. Sletten, Acton; William B. Goggins, Jr., Winchester, and Philipp Blacksmith, Concord, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Jan. 27, 1969, Ser. No. 795,777
Int. Cl. G01s 9/02
U.S. Cl. 343—5 SA **3 Claims**

A radar system of object recognition wherein multiple coherent harmonic frequency signals are directed towards an object and the return signals therefrom are passed through a superhetrodyne receiver for phase comparison purposes to



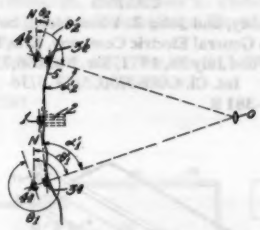
provide a resultant signal having characteristics distinguishing the object from its background.

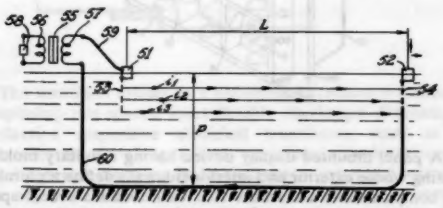
3,719,947

METHOD OF AND DEVICE FOR DETECTING SUBMERGED BODIES BY MEANS OF MEGAMETER RADIO WAVES

Henri Gutton, 134, rue Perronet, Seine, France; Jean Jacques Hugon, deceased, late of 21, rue de Belfort, Asnieres, Siene, France (by Simone Jeanne Georgette Hugon, heir); Marie Jeanne Augarde, 16, rue du Poste, Sainte-Barnabe-Marseille, Bouches-du-Rhone, France, and Emile Hugon, 22, rue de Dinkergue, Casablanca, Morocco (heirs)

Filed June 21, 1961, Ser. No. 119,253
Claims priority, application France, July 7, 1960, 60832275
Int. Cl. G01s 3/02
U.S. Cl. 343—112 R **16 Claims**





A method of detecting bodies which are submerged into a liquid mass, by means of megameter radio waves generating on the surface of said liquid mass a plurality of electric fields slightly inclined in their propagation direction and the horizontal component of which vertically propagates inwardly of said liquid mass, which consists in transmitting at the sur-

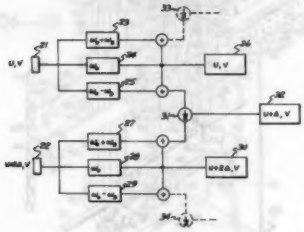
face of the liquid mass megameter radio waves of the aforementioned character, simultaneously receiving in a plurality of receiving stations spaced from each other said emitted waves and the waves obtained by reflection, on a submerged obstacle to be detected, of the vertically propagated horizontal component of the electric field existing in vertical alignment with said obstacle, determining at each receiving station the included angle formed by the lines joining said station to the wave emission and to the obstacle, measuring at the receiving stations for which said included angle is comprised between 60° and 120°, on the one hand, the phase-shift between the emitted and reflected waves and, on the other hand, the bearing angle formed by the direction for which the reception of the reflected waves is maximum and a stationary direction which is similar for all the receiving stations determining by the crossbearing method the geographical position of said obstacle by utilizing the thus measured bearing angles, and computing the depth of said obstacle from said measured phase-shift.

3,719,948

INCREASED FIELD OF VIEW OF DETECTOR ARRAY

Rolf K. Mueller, Brighton, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 8, 1970, Ser. No. 79,156
Int. Cl. G01s 3/06
U.S. Cl. 343—113 R **10 Claims**



A system for increasing the field of view of an array of detectors is described. The system also unambiguously positions the target with respect to the normal to the array. These advantages are obtained by periodically linearly moving, or vibrating, the array along an axis within the plane of the array. The frequency of vibration is constant and is selected for convenient detection and measurement. The amplitude of vibration is related to the spacing of the detectors within the array so that expanding the equation describing the field of view of a single detector as a Taylor series along the axis of vibration yields an expression containing frequency components which are readily detected and separated to thereby effectively double the density of detectors within the array.

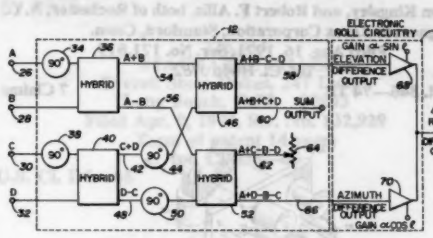
3,719,949

ANTENNA PATTERN ROLL STABILIZATION

Christian O. Hemmi, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1969, Ser. No. 889,568
Int. Cl. G01s 5/02
U.S. Cl. 343—117 **10 Claims**

Elements of a phased array antenna are grouped and signals from the various groups are combined to produce an elevation difference signal and an azimuth difference signal. The elevation difference passes through circuitry having a control signal that varies with the cosine of the antenna roll angle and the azimuth difference signal passes through a circuit having a control input equal to the sine of the roll angle. The outputs of



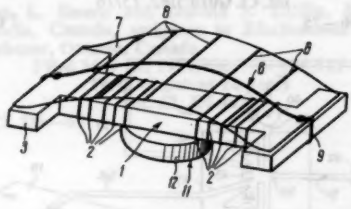
each of these circuits are combined to produce a roll stabilization signal.

3,719,950

ANTENNA SYSTEM FOR VHF AND UHF RADIO DIRECTION FINDERS

Aron Borukhovich Bukhman, Khersonskaya ulitsa, 18, kv. 90; Evgeny Alexandrovich Drovenkov, Sevastopolsky prospekt, 34, kv. 9; Felix Alexandrovich Ivaschenko, Rochdelskaya ulitsa, 11/5, kv. 54; Aron Meerovich Aizenshtein, Ovchinnikovskaya naberezhnaya, 22/24, kv. 24, and Igor Lvovich Yanushkevich, Angarskaya ulitsa, 49, korpus 2, kv. 93, all of Moscow, U.S.S.R.

Filed Nov. 3, 1971, Ser. No. 195,301
Int. Cl. G01s 5/04
U.S. Cl. 343—788 **2 Claims**



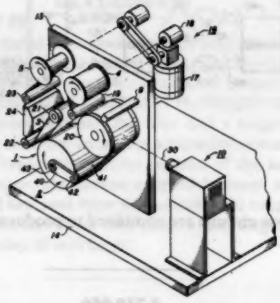
An antenna system for a VHF and UHF radio direction finder comprises a loop antenna formed by turns which are arranged on an elongated magnetodielectric core. The antenna system has also an omnidirectional antenna member and a switch means which shapes the resultant directivity pattern by adding up signals from the loop and omnidirectional antennas and changing the position of this pattern discretely by 180° in the horizontal plane to obtain its mirror image. The omnidirectional antenna is made in the form of a closed turn arranged on the core of the loop antenna so that it is substantially perpendicular to the turns of the loop antenna. A portion of the closed turn is disposed in the direction of the longitudinal axis of the core is elevated above the core surface through a known distance whereby the magnitude of the signal from the omnidirectional antenna is such that the two resultant directivity patterns of the antenna system intersect only at two points in a horizontal plane.

3,719,951

WRAP ADJUST DEVICE FOR CONTROLLING ENGAGEMENT BETWEEN A WEB AND ROLLER IN AN IMAGING SYSTEM

William Kingsley, and Robert F. Allis, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 16, 1971, Ser. No. 171,819
Int. Cl. H04n 5/82
U.S. Cl. 346—74 TP 7 Claims



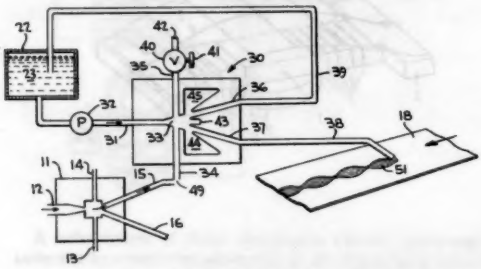
The temperature of a heat sensitive web is controlled by varying the contact area between the web and a thermo roller having an appropriate thermo energy device coupled to it. A wrap adjust roller is supported for movement along a circular path concentric with the periphery of the thermo roller and varies the surface area contact between web and thermo roller at different locations relative to the thermo roller.

3,719,952

FLUERIC READOUT SYSTEM

Saul Elbaum, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed March 4, 1971, Ser. No. 121,082
Int. Cl. G01d 5/42, 15/16
U.S. Cl. 346—75 7 Claims



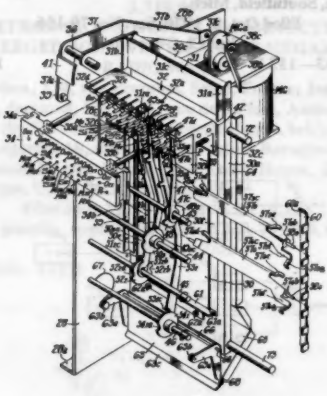
A flueric readout system is disclosed in which a visual permanent record, as a function of time, is obtained of the output of a fluid amplifier without the use of moving parts or electromechanical transducers. A supply of marking medium capable of imparting impressions upon a recording surface is combined with a fluid amplifier of the proportional or digital type such that the flow of fluid in at least one output channel of the fluid amplifier causes the flow of the marking medium onto the recording surface. The recording surface is typically in the form of a paper chart recorder which travels at a predetermined rate. In one embodiment the flow of marking medium is accomplished by extending a passage from a supply of marking medium into at least one output channel of the amplifier at such an angle that the marking medium is drawn into the output channel and deposited on the moving recorder. In a second embodiment, the marking medium is supplied directly to the power nozzle of a secondary fluid amplifier and the action of the primary fluid amplifier causes the marking medium in the secondary fluid amplifier to switch from one or the other of two output channels. One of the output channels extends onto the recorder while the other output channel returns unused marking medium to its reservoir. In a third embodiment, both output channels of the secondary amplifier direct the marking medium onto the recorder so as to obtain simultaneous comparison of both channels.

3,719,953

CARD PUNCH

Sakae Fujimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Oct. 22, 1970, Ser. No. 83,108
Claims priority, application Japan, Oct. 31, 1969, 44/87784
Int. Cl. G07c 1/06
U.S. Cl. 346—83 10 Claims

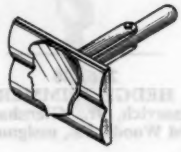


A card punch has a card insertion slot communicating with a card receiving passage, and receiving members are mounted for movement into and out of the passage. An operating device controls such movement to control the depth of insertion of a card through the slot into the passage. A plurality of punch pins are mounted for reciprocation across the passage to punch holes in a card, and a striking member is movable toward the passage and formed with a number of holes each aligned with a respective punch pin. A plurality of shield members are selectively interposable, in an operative position, between an end of a respective punch pin and the associated opening in the striking member, and cam means control movement of the shield members to the operative positions. A timing device operates the cam means to move the shield members to the operative position only at respective indicated times whereby, at any selected instant, only those shield members corresponding to the indicated time are in the operative position. A push button is selectively actuable at any selected instant to energize a solenoid to move the striking member to cause only those punch pins then having the associated shield member in the operative position to move across the passage to punch holes in a card in the passage.

DESIGNS

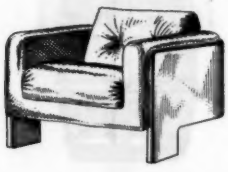
MARCH 6, 1973

226,411
CUFF LINK
Lucy T. Schramm, 65 Shetland Lane, Willingboro, N.J. 08046
Filed Feb. 16, 1971, Ser. No. 115,932
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—422



226,412
CHAIR
Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Filed May 19, 1971, Ser. No. 145,094
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—69

226,413
CHAIR
Jacques Guillon, Montreal, Quebec, Canada, assignor to Jacques Guillon Designers Inc., Montreal, Quebec, Canada
Filed May 21, 1971, Ser. No. 145,994
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—55



226,414
STACKABLE CHAIR
Everett Stacy Dukes, 247 Loma, Long Beach, Calif. 90803
Filed Apr. 9, 1971, Ser. No. 132,929
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—65

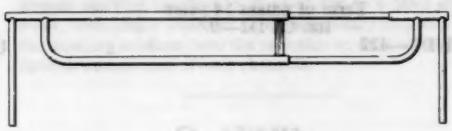
226,415
CHAIR
Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Filed May 19, 1971, Ser. No. 145,113
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—69

226,416
FOLDABLE CHAIR
Suekiti Utida, 9–7 Hioki-dori, Nakamura-ku, Nagoya, Japan
Filed Nov. 18, 1970, Ser. No. 26,071
Claims priority, application Japan May 23, 1970
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—73

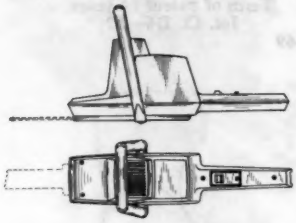
226,417
COFFEE TABLE
Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Filed Apr. 9, 1971, Ser. No. 132,934
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

226,418
CASCADE TYPE MERCHANDISING RACK
John F. Gray, N. Old Barrington Road, Barrington, Ill. 60010
Filed Aug. 12, 1971, Ser. No. 171,404
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—190

226,419
BEDSIDE RAIL
Morton I. Thomas, 125 South St., Monroe, N.Y.
Filed Aug. 5, 1971, Ser. No. 169,595
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—198



226,420
HEDGE TRIMMER
William E. Bartasevich, Jr., Glenshaw, and James E. Edgell, Bradford Woods, Pa., assignors to Disston, Inc., Pittsburgh, Pa.
Filed Mar. 4, 1971, Ser. No. 121,237
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—8



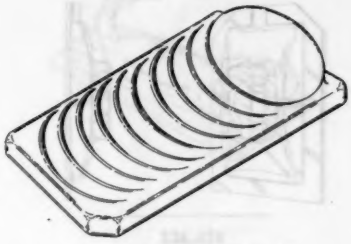
226,421
POST AND BEAM SUPPORT
Marvin L. Rich, 1018 Opal, Boise, Idaho 83705
Filed Apr. 9, 1971, Ser. No. 132,927
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235

226,422
ESCUTCHEON PLATE WITH PUSH BUTTON FOR DOOR BELLS
Lawrence P. Mellyn, Glocester, R.I., assignor to General Electric Company
Filed Mar. 27, 1972, Ser. No. 238,730
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—182

226,423
ESCUTCHEON PLATE WITH PUSH BUTTON FOR DOOR BELLS
Lawrence P. Mellyn, Glocester, R.I., assignor to General Electric Company
Filed Mar. 27, 1972, Ser. No. 238,745
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—183

226,424
BOTTLE
Howard Cooper, 175 E. Delaware, Chicago, Ill. 60611
Filed Nov. 18, 1971, Ser. No. 200,281
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—28

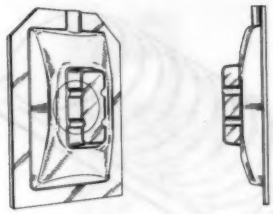
226,425
TRAY FOR MEAT PATTIES
Harold L. Orlich, Greenville, and Philip A. Sanborn, Jr., Spartanburg, S.C., assignors to W. R. Grace & Co., Duncan, S.C.
Filed Jan. 4, 1972, Ser. No. 215,450
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—189



226,426
COMBINED DISPLAY AND PACKAGING TRAY FOR MEAT OR THE LIKE
Paul Joonase, Taylors, and Richard R. Perdue, Greer, S.C., assignors to W. R. Grace & Co., Duncan, S.C.
Filed May 22, 1972, Ser. No. 255,955
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—242

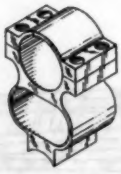
226,427
FOLDED CART
Harold Isaacs, 2583 Fenwick Road, University Heights, Ohio 44118
Filed Mar. 19, 1971, Ser. No. 126,382
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—3 M

226,428
COLOR INDICATOR DEVICE
Ward B. Davis, Glendale, Calif., assignor to Sterilizer Control Royalties, North Hollywood, Calif.
Filed Feb. 3, 1971, Ser. No. 112,509
Term of patent 14 years
Int. Cl. D24—*02;* D9—*04*
U.S. Cl. D16—2

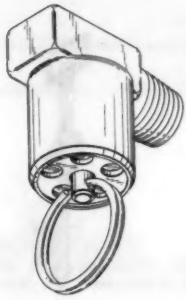


226,429
BOW STRING SILENCER
Jack P. Christen, Onalaska, Wis., assignor to Outers Laboratories, Inc., Onalaska, Wis.
Filed Jan. 19, 1972, Ser. No. 219,208
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—5

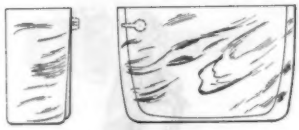
226,430
MOUNTING FOR A RIFLE TELESCOPIC SIGHT
Donald R. Johannsen, Inkster, Mich., assignor to Wideview Scope Mount Corporation, Inkster, Mich.
Filed May 26, 1972, Ser. No. 257,487
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7



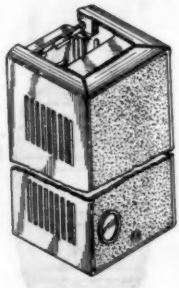
226,431
PRESSURE RELIEF VALVE
Philip W. Embury, Jr., Fairport, N.Y., assignor to Qualitrol Corporation, Fairport, N.Y.
Filed Feb. 8, 1971, Ser. No. 113,803
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



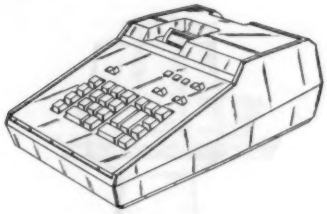
226,432
TOILET TANK
Warren Gregory Anderson, Morganton, N.C., assignor to American Standard Inc., New York, N.Y.
Original design application Jan. 16, 1970, Ser. No. 20,960. Divided and this application Aug. 20, 1971, Ser. No. 173,716
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—66



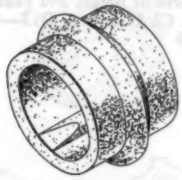
226,433
ROOM DEODORANT VAPORIZING CASING
Joseph A. Hill, Glen Ellyn, Ill., assignor to Lien Chemical Company, Franklin Park, Ill.
Filed June 10, 1971, Ser. No. 152,024
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—148



226,434
DESK TOP ELECTRONIC CALCULATOR
Manfred Link, Nurenberg, Germany, assignor to Triumph Werke Nuernberg A.G., Nuernberg, Germany
Filed June 18, 1971, Ser. No. 154,715
Claims priority, application Germany Feb. 12, 1971
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



226,435
INSULATOR FOR AN ELECTRIC HEATING ELEMENT
Amos W. Hackman, Kirkland, Ill., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Oct. 5, 1970, Ser. No. 25,326
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D26—10



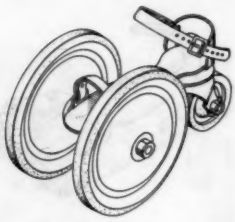
226,436
CHRISTMAS ORNAMENT
Katherine B. Vandewater, P.O. Box 184, Sherwood, Oreg. 97140
Original design application May 6, 1970, Ser. No. 22,845. Divided and this application Oct. 20, 1970, Ser. No. 25,574
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D29—1 B

226,437
GOLF TROPHY
Milton E. Jordan, Adelphi, and Harold W. Rohrback, College Park, Md., assignors to Gator Creations, Inc.
Filed Aug. 26, 1971, Ser. No. 175,417
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 D

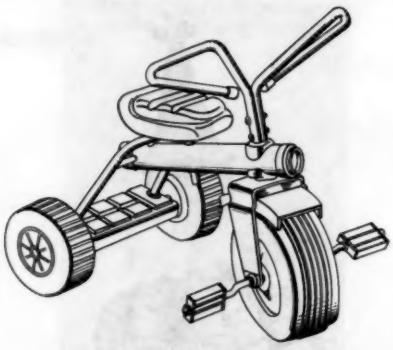
226,438
TOY FINGER PUPPET
David S. Matteson, Fort Lauderdale, Fla., assignor to The Broward County School Board, Fort Lauderdale, Fla.
Filed Aug. 6, 1971, Ser. No. 122,650
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

226,439
EXERCISER
Cliff J. Coker, Laguna Niguel, Calif., assignor to Norma J. Coker, Huntington Beach, Calif.
Filed Dec. 8, 1971, Ser. No. 206,236
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K

226,440
WHEELED SKATE
Arthur G. Bentley, 18655 Clark St., Tarzana, Calif. 91356
Filed Oct. 26, 1971, Ser. No. 192,699
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—14 C



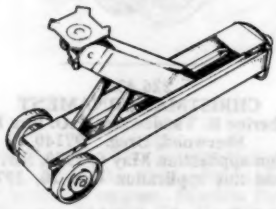
226,441
VELOCIPEDE
Viktor Schreckengost, Cleveland Heights, Ohio, assignor to The Murray Ohio Manufacturing Co., Nashville, Tenn.
Filed June 25, 1971, Ser. No. 157,067
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D34—15 AL



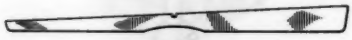
226,442
PEDAL DRIVEN WHEELED VEHICLE
Howard K. Rees, Torrance, Raymond J. Douglas, Lomita, and Leonard R. Moquin and Elliot Handler, Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 9, 1972, Ser. No. 225,014
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D34—15 AL

226,443
BEVERAGE GLASS OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Apr. 21, 1971, Ser. No. 136,290
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D36—8 G

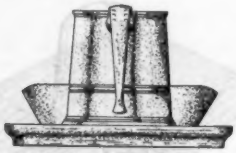
226,444
TROLLEY JACK
Bertram Donald Granger, Wollaton, Nottingham, England, assignor to Newman Granger Industries Limited
Filed Sept. 29, 1971, Ser. No. 184,977
Term of patent 3½ years
Int. Cl. D15—*99;* D12—*05*
U.S. Cl. D41—1 D



226,445
TRAY
Thomas H. Eckdahl, Brooklyn Center, Minn., assignor to Plastics, Inc., St. Paul, Minn.
Filed Aug. 12, 1970, Ser. No. 24,461
Term of patent 7 years
Int. Cl. D7—*99*
U.S. Cl. D44—10 E

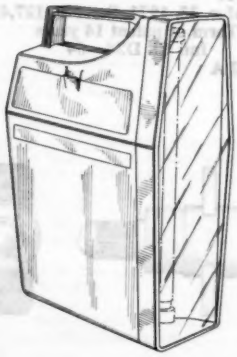


226,446
FOOD AND BEVERAGE SERVING SET
Ralph P. Wilton, Wrightsville, and John J. Fitzpatrick, Hellam, Pa., assignors to Wilton Brass Company, Columbia, Pa.
Filed Apr. 27, 1971, Ser. No. 138,010
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—10 E

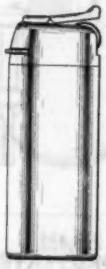


226,447
FINGER RING
Daniel Shiman, Maplewood, N.J., assignor to Shiman Industries Inc., Newark, N.J.
Filed Apr. 30, 1971, Ser. No. 139,301
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 C

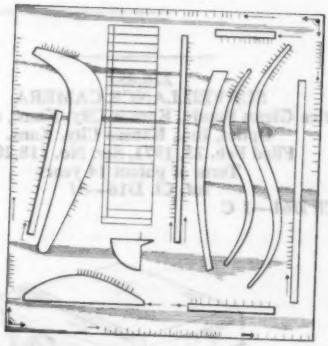
226,448
ELECTRIC LANTERN
Randall L. May, Andover, and Benjamin C. Baugh and Robert R. Deines, Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.
Filed Oct. 29, 1971, Ser. No. 194,094
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



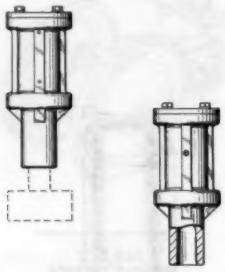
226,449
LIGHTER
Johan Willem Van Heuvel, Voorburg, Netherlands, assignor to Gebrs. Van Poppel N.V., Assen, Netherlands
Filed Sept. 9, 1971, Ser. No. 179,250
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27



226,450
GARMENT PATTERN DRAFTING STENCIL
Camille Albert Ajus and Marguerite Nicholas Ajus, both of 910 Lamer, Apt. 5, St. Laurent, Quebec, Canada
Filed May 13, 1971, Ser. No. 143,277
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D52—6 A

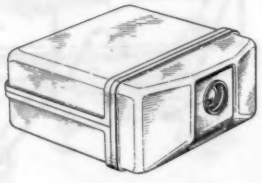


226,451
VIBRATOR FOR MATERIAL HANDLING OR THE LIKE
Don B. Lash, Houston, Tex., assignor to National Air Vibrator Company, Houston, Tex.
Filed Jan. 4, 1971, Ser. No. 103,934
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1

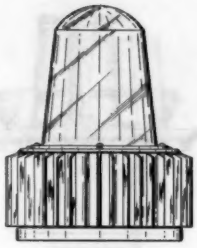


226,452
RECORD PLAYER
Hiroaki Yazawa, Yamatokoriyama-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 6, 1971, Ser. No. 131,841
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R

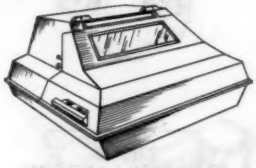
226,453
SURVEILLANCE CAMERA
Maurice Glenn Bundy, Kansas City, Kans., assignor to Optics, Inc., Kansas City, Kans.
Filed Feb. 23, 1971, Ser. No. 118,205
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 C



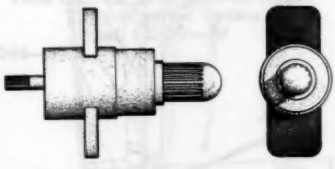
226,454
FLASHER
George L. Davidson and Renaldo M. Beltramo, Cincinnati, Ohio, assignors to Tuttle, Incorporated, Cincinnati, Ohio
Filed Aug. 3, 1970, Ser. No. 24,260
Term of patent 14 years
Int. Cl. D29—*02*; D26—*02*
U.S. Cl. D72—1



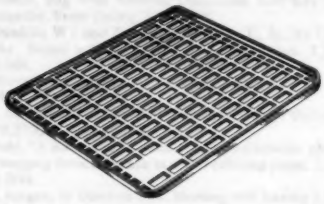
226,455
BARBECUE GRILL AND OVEN COMBINATION
Charles D. Dushek, Lisle, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed May 17, 1971, Ser. No. 144,366
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10 E



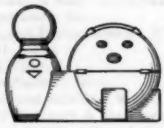
226,456
SYRINGE UNIT
Anthony E. Bolyn, Mount Pocono, and Lloyd G. Colio, Stroudsburg, Pa., assignors to Richardson-Merrell Inc., New York, N.Y.
Filed Mar. 23, 1971, Ser. No. 127,432
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—12 A



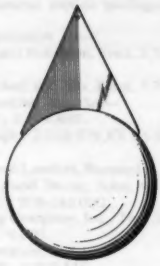
226,457
BREAD TRAY
James D. Wilson, Orange County, Calif., assignor to Banner Metals, Inc., Compton, Calif.
Filed July 29, 1971, Ser. No. 167,560
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



226,458
BOWLING EQUIPMENT BAG
Julian A. Carreiro, Santa Susanna, Calif., assignor to Angelo N. Giordano and Joseph R. Raio, Canoga Park, Calif., fractional part interest to each
Filed July 20, 1971, Ser. No. 164,488
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—5 D



226,459
AUTOMOBILE STOP INDICATOR FOR GARAGE USE
Raymond S. Holtz, 16 Mountain Road, West Hartford, Conn. 06104
Filed Jan. 6, 1972, Ser. No. 215,984
Term of patent 14 years
Int. Cl. D20—*03*; D29—*02*
U.S. Cl. D96—12 R



226,460
SPOON OR SIMILAR ARTICLE
Burr Sebring, Barrington, R.I., assignor to Gorham, a Division of Textron Inc., Providence, R.I.
Filed June 10, 1971, Ser. No. 152,006
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12 A

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF MARCH, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aaron, David. Playground apparatus. 3,719,358, Cl. 272-60.000.

AB Emmaboda Glasverk: *See—*
Rasmusson, Stig Arne Rasmus; Dahlstrom, Leif Key Tommy; and Thelander, Ernst Georg, 3,719,284.

Abbate, Franklin W.; and Farrissey, William J., Jr., to Upjohn Company, The. Novel n-(piperazinylethyl)-carbamates. 3,719,680, Cl. 260-268.00r.

Abbott Laboratories: *See—*
Plotnikoff, Nicholas Peter, 3,719,761.

Abe, Iwao, to Chisso Corporation. Packing vessel for thin sheet materials. 3,719,273, Cl. 206-65.00f.

Abe, Takeshi, to Kabushiki Kaisha Ricoh. Automatic plate clamping and discharging device for use in offset printing press. 3,719,142, Cl. 101-216.000.

Abildtrup, Jorgen, to Danfoss A/S. Heating unit having a PTC heating resistor. 3,719,796, Cl. 219-462.000.

Accountius, Oliver E., to North American Rockwell Corporation. Carbonaceous material and method of preparation. 3,719,452, Cl. 423-449.000.

ACF Industries, Incorporated: *See—*
O'Leary, Walter E., 3,719,155.

Ackerman, Myron: *See—*
Burley, John Charles, 3,719,450.

Adahan, Carmeli. Skid control module. 3,719,399, Cl. 303-21.0be.

Adams, John A., Jr., to Stromberg-Carlson Corporation. Attendant to trunk coupler. 3,719,784, Cl. 179-27.0ca.

Addor, Roger Williams; and Ailman, David Edgar, to American Cyanamid Company. Bisphosphorylated imidodithiocarbonates and methods for their preparation. 3,719,700, Cl. 260-455.00p.

Addor, Roger Williams; and Ailman, David Edgar, to American Cyanamid Company. Method for utilizing bisphosphorylated imidodithiocarbonates as insecticides or arachnicides. 3,719,757, Cl. 424-204.000.

Adler, Robert, to Zenith Radio Corporation. Torsional wave transducer. 3,719,907, Cl. 333-30.00r.

Adrian, Donald J., to United States Government, Navy. Absolute range fuze system using limiting or AGC. 3,719,944, Cl. 343-7.0pf.

Advance Products Corporation: *See—*
Kraklau, David M.; and Taylor, John H., 3,718,977.

AEC-Elotherm G.m.b.H.: *See—*
Gosger, Peter, 3,719,569.

Agfa-Gevaert Aktiengesellschaft: *See—*
Engelsmann, Dieter; and Schroder, Rolf, 3,719,126.

Ahle, James L., to Gulf Research & Development Company. Protection of wheat and grain sorghum from herbicidal injury. 3,719,466, Cl. 71-88.000.

Ahlquist, Norman C.; and Charlson, Robert J., to Battelle Developement Corporation. Analog circuits for calculating relative humidity from dew point and dry bulb temperature information. 3,719,810, Cl. 235-151.300.

Aid Corporation, The: *See—*
Lunsford, Waymond S.; Watts, Max W.; and Mason, Kenneth W., 3,718,946.

Ailman, David Edgar: *See—*
Addor, Roger Williams; and Ailman, David Edgar, 3,719,700.
Addor, Roger Williams; and Ailman, David Edgar, 3,719,757.

Air Products and Chemicals, Inc.: *See—*
Cebalo, Tony, 3,719,686.

Airey, Leslie: *See—*
Barnard, Mark Gary Sedgwick; and Airey, Leslie, 3,719,041.

Aisin Seiki Kabushiki Kaisha: *See—*
Takayama, Katuki; Nishida, Koji; and Yamazaki, Hayao, 3,719,398.

Aizenshtein, Aron Meerovich: *See—*
Bukhman, Aron Borukhovich; Drovenkov, Evgeny Alexandrovich; Ivaschenko, Felix Alexandrovich; Aizenshtein, Aron Meerovich; and Yanushkevich, Igor Lvovich, 3,719,950.

AKG Akustische u. Kino-Gerate: *See—*
Fidi, Werner, 3,719,908.

Aktiebolaget Bofors: *See—*
Simmons, Bjorn Herman Olof; and Karsberg, Lars Anders Birger, 3,719,339.

Aktiengesellschaft Brown, Boveri & Cie: *See—*
Meier, Eugen, 3,719,867.

Akzona Incorporated: *See—*
Rupp, Hans-Dieter; Siggel, Erhard; Meyer, Gerhard; Worbs, Ernst-Georg; Wallrabenstein, Michael; and Schopf, Albert, 3,719,681.
Wegerhoff, Arno; Schmitz, Franz-Josef; and Macura, Carl, 3,719,597.

Albrecht, Robert J.; Griner, Arthur J.; and Hoagland, Frank V. N., to Nabesco, Inc. Continuous motion packaging machine. 3,719,019, Cl. 53-159.000.

Alcolac Chemical Corporation: *See—*
Stecklen, Robert; and Robinson, Fred, 3,719,646.

Alix, Hans: *See—*
Schuhmann, Siegfried; and Alix, Hans, 3,719,437.

Allegheny Ludlum Industries, Inc.: *See—*
Roessing, Keith W., 3,719,469.

Allen, Harry W. Bow-sight. 3,718,979, Cl. 33-265.000.

Allen, R. C., Inc.: *See—*
Van Dyke, John; and Lamfers, Bernard, 3,719,874.

Allen, Robert William; and Drane, John, to Simon, Henry, Limited. Sieving. 3,719,276, Cl. 209-240.000.

Alliance Manufacturing Company, Inc., The: *See—*
Carli, Alvin J., 3,719,005.

Allied Chemical Corporation: *See—*
Deggine, Edward R., 3,719,515.
Lamb, George Edwin Robert; Prevorsek, Dusan Ciril; and Oswald, Hendrikus Johan, 3,719,539.
Lee, Lester T. C.; and Hirsch, Stephen S., 3,719,640.
Midwinter, John Edwin, 3,719,411.
Stahl, Richard F., 3,719,603.

Allis, Robert F.: *See—*
Kingsley, William; and Allis, Robert F., 3,719,951.

Alnor Instrument Company; division of Illinois Testing Laboratories, Inc.: *See—*
Obermaier, Alfred A.; and Pierman, Martin J., 3,719,082.

Alumet Corporation, The, mesne: *See—*
Rheingold, Lawrence M.; Berlin, Milton; De Lalio, Louis; and Schierwagen, Alfred, 3,719,536.

Aluminium Suisse S.A.: *See—*
Laroche, Rene, 3,719,884.

Aluminum Company of America: *See—*
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American Chain & Cable Company, Inc.: *See—*
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American Cyanamid Company: *See—*
Addor, Roger Williams; and Ailman, David Edgar, 3,719,700.
Addor, Roger Williams; and Ailman, David Edgar, 3,719,757.
Blank, Werner Josef, 3,719,623.
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American Metal Climax, Inc.: *See—*
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American Modular Systems Designs, Inc.: *See—*
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American Standard Inc.: *See—*
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American Store Equipment Corporation: *See—*
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Amidon, Roger W.; and Greenfield, Harold, to Uniroyal, Inc. Selective hydrogenation of polycyclic aromatic hydrocarbons using as catalyst a sulfide of a platinum group metal. 3,719,719, Cl. 260-667.000.

Ampex Corporation: *See—*
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Anaconda Wire and Cable Company: *See—*
Benjamin, George N., III; and Pence, Clarence M., 3,719,444.

Ananiades, Constantine S., to Burroughs Corporation. Logic circuit. 3,719,830, Cl. 307-218.000.

Andersen, Dan A., to Chem-Therm Mfg. Co. Automobile conveyor. 3,719,151, Cl. 104-172.00b.

Anderson, Daniel J.; and Jimerson, James C., to Mallory, P. R., & Co., Inc. Capacitor electrolyte. 3,719,602, Cl. 252-62.200.

Anderson, Dean M.; and Burbick, Ross E., to Wiggins, E. B., Inc. Breakaway coupling. 3,719,194, Cl. 137-68.000.

Anderson, Richard J.: *See—*
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Ando, Noriyoshi: *See—*
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Andreatch, Peter, Jr.; and Fisher, George Myles Cordell, to Bell Telephone Laboratories, Incorporated. Light guide paths comprising densified regions in a transparent medium and method of producing. 3,719,462, Cl. 65-30.000.

Andrews, John Marshall, Jr.; and Lepselter, Martin Paul, to Bell Telephone Laboratories, Incorporated. Solid state temperature sensor employing a pair of dissimilar Schottky-barrier diodes. 3,719,797, Cl. 219-501.000.

Ankerwerk Nurnberg GmbH: *See*—
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Antal, Mandor: *See*—
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Antonen, Robert C., to Dow Corning Corporation. Solvent-free liquid organosiloxane resins. 3,719,630, Cl. 260-37.0sb.

Antonio, Ezio Dell; and Tarizzo, Quinto, to Olivetti, Ing., C., & C., S.p.A. Punched-tape unwinding device. 3,719,330, Cl. 242-55.018.

Aoki, Fumio: *See*—
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Aoki, Hisashi: *See*—
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Apeco Corporation: *See*—
Miller, Hobart G.; and Mariol, James F., 3,719,244.

Applegarth, Alexander Rufus, to Aradar Corporation. Selective identity system. 3,719,943, Cl. 343-7.300.

Aquila, Joseph. Tow bar apparatus. 3,719,294, Cl. 214-86.00a.

ARA, Inc.: *See*—
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Aradar Corporation: *See*—
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Arai, Tohru: *See*—
Komatsu, Noboru; Arai, Tohru; and Mizutani, Masayoshi, 3,719,518.

Archer, John C. Doll house for city children. 3,719,001, Cl. 46-12.000.

Arcocha, Humberto L.; Dullabaun, Paul W.; and Lauffer, Fred E., to Owens-Illinois, Inc. Pallet assembly. 3,719,157, Cl. 108-51.000.

Arendt, Ronald H., to General Electric Company. Ceramic articles and method of sealing ceramics. 3,719,550, Cl. 161-188.000.

Arenson, Herbert. Caster assembly with integral horn and pintle and method of making same. 3,718,942, Cl. 16-37.000.

Ark-Les Switch Corporation: *See*—
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Armco Steel Corporation: *See*—
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Arn. Kiekert Sohne: *See*—
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Arne, Christian; and Brogren, Erik E., to Chicago Bridge & Iron Company. Offshore structure with static and dynamic stabilization shell. 3,719,048, Cl. 61-46.500.

Arons, Jakob de Swaan: *See*—
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Arrow-Hart, Inc.: *See*—
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Arthur, Jett C., Jr.; Singh, Sujan; and Wade, Ricardo H., to United States of America, Agriculture. Crosslinked heterocyclic cellulosic products. 3,719,449, Cl. 8-120.000.

Arvai, Mihaly: *See*—
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Arvey Corporation: *See*—
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Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
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Asao, Hiroshi; Hihara, Takeshi; Endo, Seiji; Furuya, Chikashi; and Sano, Kouhei, to Toho Chemical Industry Co., Ltd. Soil stabilization method. 3,719,050, Cl. 61-36.00r.

Ash Kasei Kogyo Kabushiki Kaisha: *See*—
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Askew, Warren S.: *See*—
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Associated Chemical Companies Limited: *See*—
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Astil, Jaromir. Water purifying device. 3,719,593, Cl. 210-135.000.

Astrotronic Research, Ltd.: *See*—
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Augarde, Marie Jeanne: *See*—
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Austin, Marcus Luther. Flexible linkages. 3,718,996, Cl. 36-67.00b.

Authier, Bernhard; Deckert, Helmut; Hofbauer, Werner; and Bauer, Rudolf, to Wacker-Chemitronic, Gesellschaft fur Elektronik Grundstoffe m.b.H. Packing for semiconductor discs. 3,719,271, Cl. 206-1.00r.

Autometrics Co.: *See*—
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Avco Corporation: *See*—
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Avery Laboratories, Inc.: *See*—
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Avery, Roger E., to Avery Laboratories, Inc. Heart stimulation electrode with a conical positioning parachute. 3,719,190, Cl. 128-418.000.

Bach, Hartwig C., to Monsanto Company. Process for the preparation of unsaturated nitriles. 3,719,701, Cl. 260-465.900.

Bach, Lloyd G., to Bendix Corporation, The. Hybrid brake booster control valve. 3,719,044, Cl. 60-404.000.

Bahr, Ulrich: *See*—
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Baker, Alan Anthony: *See*—
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Baker, Joseph W.; and Schumacher, Ignatius, to Monsanto Company. Dinitrophenoxymethyl amines. 3,719,675, Cl. 260-247.70c.

Baker Perkins Inc.: *See*—
Loomans, Bernard A., 3,719,350.

Ball, Lloyd D.; Friend, Clifford K.; and Schneider, Lynn E., to Sterling Laboratories; division of Sterling Scientific Industries. Target generator. 3,718,988, Cl. 35-10.400.

Bang, Mogens W., to Stackpole Carbon Company. Coarse and fine adjustment potentiometer. 3,719,915, Cl. 338-183.000.

Banks, Eric John, to Ford Motor Company. Clutch actuator for a geared power transmission mechanism. 3,719,101, Cl. 74-337.500.

Bannister, John D.; Peters, Joseph C.; and Jordan, Michael, to Damon Corporation. Liquids sampler with probe-bathing chamber. 3,719,086, Cl. 73-423.00a.

Barbet, Lucien: *See*—
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Bard, C. R., Inc.: *See*—
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Bardeau, William M. Cooking appliance. 3,719,507, Cl. 99-375.000.

Barker, Joseph B., III: *See*—
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Barnard, Mark Gary Sedgwick; and Airey, Leslie, to Secretary of State for Defence and Leyland Gas Turbines Limited. Temperature-responsive control for gas turbine engines. 3,719,041, Cl. 60-39.250.

Barnes, Robert B.: *See*—
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Barnum, Phillip R., to Breene, James D. System for changing the output response characteristics of an acoustic input. 3,719,782, Cl. 179-1.00j.

Barr, Charles R.; and Pfaff, Maurice, to Eastman Kodak Company. Complexed p-phenylene diamine containing photographic element and development process therefor. 3,719,492, Cl. 96-55.000.

Barret, Jean Pierre; Monnot, Max; and Trognee, Jacques, to Institut Francais du Petrole des Carburants et Lubrifiants. Method based on the doppler effect for determining the distances travelled over by a vehicle and device for practising said method. 3,719921, Cl. 340-3.00d.

Bartee, Charles E.: *See*—
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BASF Wyandotte Corporation: *See*—
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Bass, John C., to Gulf General Atomic Incorporated. Fuel pin spacer structure. 3,719,559, Cl. 176-78.000.

Bass, Michael: *See*—
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Battelle Development Corporation: *See*—
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Battelle Memorial Institute: *See*—
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Battershell, Robert D., to Diamond Shamrock Corporation. Substituted trimesonitriles for regulating pests on plants. 3,719,765, Cl. 424-304.000.

Baturka, Walter, to Houdaille Industries, Inc. Collet chuck for threaded shank tools. 3,719,367, Cl. 279-1.00a.

Bauer, Kurt: *See*—
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Bauer, Rudolf: *See*—
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Bausch & Lomb Incorporated: *See*—
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Baxter Laboratories, Inc.: *See*—
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Baychem Corporation: *See*—
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Bayer Aktiengesellschaft: *See*—
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Jennes, Gert; Huther, Edmund; and Wolff, Willi, 3,719,649.
Oberkirch, Wolfgang; Pampus, Gottfried; and Gunther, Peter, 3,719,652.
Schuster, Herbert; Nutzel, Karl; Dinges, Karl; and Ott, Karl-Heinz, 3,719,731.

Bean, Lloyd F., to Xerox Corporation. Methods of organized thermoplastic xerography and photoreceptor structure therefor. 3,719,483, Cl. 96-1.100.
Beaton & Corbin Manufacturing Company, The: *See*—
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Bechtef International Corporation: *See*—
Wasp, Edward J., 3,719,397.
Becker, Lanson; and Huffman, Theron M., to General Signal Corporation. Power steering system affording emergency steering capability. 3,719,249, Cl. 180-79.20r.
Becton, Dickinson Electronics Company: *See*—
Kendall, Thomas L.; and Lincoln, Thomas C., 3,719,785.
Behr, Michael I.; Coon, Lewis B., Jr.; and Bickel, Charles E., to Burroughs Corporation. System for processing signals having peaks indicating binary data. 3,719,934, Cl. 340-174.10h.
Bell & Howell Company: *See*—
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Bell Telephone Laboratories, Incorporated: *See*—
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Leheny, Robert Francis; and Shaklee, Kerry Lee, 3,719,423.
Rawson, Eric Gordon, 3,719,415.
Rouse, David Michael, 3,719,815.
Vincelette, Charles James, 3,719,409.
Waaben, Sigurd Gunther, 3,719,832.
Wells, Herbert Arthur, 3,719,348.
Bell, William Rex, to Dresser Industries, Inc. Free breathing lubrication system for sealed bearing rock bits. 3,719,241, Cl. 175-228.000.
Beloit Corporation: *See*—
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Belz, Ronald A.; Kalb, Henry T.; and Trolinger, ames D., to United States of America, Air Force. Laser pulse train totalizer and interval counter. 3,719,889, Cl. 324-186.000.
Benda, Ekkehardt: *See*—
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Bendix Corporation, The: *See*—
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Cripe, Maxwell L., 3,719,043.
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Howland, George R., 3,719,039.
Mueller, Rolf K., 3,719,948.
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Benjamin, George N., III; and Pence, Clarence M., to Anaconda Wire and Cable Company. Extrusion guider. 3,719,444, Cl. 425-114.000.
Benner, Robert I., to Sun Oil Company of Pennsylvania. Naphtha conversion process including hydrocracking and hydroreforming. 3,719,586, Cl. 208-66.000.
Berends, Werner; Jacob, Heinz-Jurgen; and Eggelsmann, Harry, to U.S. Philips Corporation. X-ray tube. 3,719,846, Cl. 313-57.000.
Berg Manufacturing Company, The: *See*—
Cannella, Joseph L., 3,719,125.
Berger, Julius, to Hoffmann-La Roche Inc. Coccidiostats. 3,719,753, Cl. 424-122.000.
Bergomi, Joseph G., Jr.; and Graham, Paul R., to Monsanto Company. Ethylene/vinyl chloride/acrylamide interpolymer and styrene/butadiene/unsaturated acid terpolymer polyblend. 3,719,628, Cl. 260-29.70w.
Berlin, Milton: *See*—
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Berner, Kurt: *See*—
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Berthoux, Jean; Hostein, Charles; and Mugnier, Robert, to Progil. Electrolysis cell with anode support means. 3,719,578, Cl. 204-252.000.
Bertini, Franco: *See*—
Minisci, Francesco; Bertini, Franco; Galli, Remo; Pizzo, Torricella Del; and Quilico, Adolfo, 3,719,685.
Bethlehem Steel Corporation: *See*—
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Betts, Gary W.: *See*—
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Beuerman, Donald R.: *See*—
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Bevard, Marion Wallace; Bevard, Samuel Street, Jr.; and Groom, Frederick, III. Non-hardenable, high-density fill composition and process for making same. 3,719,511, Cl. 106-90.000.
BeVard, Ralph E., to Eraser Company, Inc., The. Wire stripper wheel for tough plastic. 3,719,007, Cl. 51-207.000.
Bevard, Samuel Street, Jr.: *See*—
Bevard, Marion Wallace; Bevard, Samuel Street, Jr.; and Groom, Frederick, III, 3,719,511.
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Bickel, Charles E.: *See*—
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Bickel, Hans; Bosshardt, Rolf; and Mueller, Johannes, to Ciba-Geigy Corporation. Derivatives of 7-aminocephalosporanic acid. 3,719,673, Cl. 260-243.00c.
Biddle, James G., Company: *See*—
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Bieber, Clarence George; and Mihalisin, John Raymond, to International Nickel Company, Inc., The. Ultra hard iron-colbalt-molybdenum-nickel alloys. 3,719,474, Cl. 75-123.000.
Biegert, Johannes P.: *See*—
Lanigan, Donald E.; and Biegert, Johannes P., 3,719,275.
Biermann, Peter, to Marker, Hannes. Toe iron for safety ski bindings. 3,719,368, Cl. 280-11.35t.
Bigelow-Sanford, Inc.: *See*—
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Billingsley, Raymond L.; Howard, Ralph L.; and Noreen, Donald H., to Westinghouse Electric Corporation. Method of and apparatus for material storage and retrieval in a warehouse system. 3,719,287, Cl. 214-16.40a.
Bio-Response, Inc.: *See*—
Rose, Samuel, 3,719,182.
Bio-Science Laboratories: *See*—
Thiers, Ralph E., 3,719,087.
Bir, Wallace G.; and Tsang, Louis C., to Monsanto Company. Removing oligomers from styrene vapor. 3,719,720, Cl. 260-669.00a.
Bishop, Glick U.; and Knox, Robin B., to Martin-Marietta Corporation. Dynamic electromagnetic environment simulator. 3,719,812, Cl. 235-151.310.
Black, William B.: *See*—
Martin, Donald H.; Holmer, Donald A.; Durant, Dennis J.; Bryan, Roland J., Jr.; Saunders, James H.; and Black, William B., 3,719,547.
Blackburn, William E.: *See*—
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Blacksmith, Philipp: *See*—
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Sletten, Carlyle J.; Goggins, William B.; and Blacksmith, Philipp, 3,719,946.
Blaetz, Philip H.; and Corbige, Orin K., to Kraftco Corporation. Frozen sandwich and process for preparing same. 3,719,138, Cl. 99-192.000.
Blahak, Johannes; and Meckel, Walter, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of aromatic dinitrohalogen compounds. 3,719,717, Cl. 260-646.000.
Blair, Lawrence William; and Bryans, Alexander Connor, to General Electric Company. Diffuser. 3,719,430, Cl. 415-207.000.
Blanchard, Jack D. Golf practice device. 3,719,362, Cl. 273-182.00r.
Blanchard, Robert R.: *See*—
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Blank, Werner Josef: *See*—
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Blank, Werner Josef, to American Cyanamid Company. Rubbery polymeric mixtures comprising a maleinized type oil. 3,719,623, Cl. 260-23.0ar.
Blankemeyer, Daniel E.: *See*—
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Blankemeyer, James C.; Blankemeyer, Daniel E.; and Blankemeyer, Robert L., to Metokote Precision, Inc. Palstic powder spraying recovery method and apparatus. 3,719,030, Cl. 55-97.000.
Blankemeyer, Robert L.: *See*—
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Blatter, Herbert Morton: *See*—
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Blattmann & Co.: *See*—
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Blick, Owe H. Moulding for suspension mounting and decoration purposes. 3,719,013, Cl. 52-222.000.
Blough, William M., Jr.: *See*—
Van Koevering, Barry D.; Blough, William M., Jr.; Bunnell, Fred H.; McDowell, William B.; and McDowell, George E., 3,718,978.
Blume, Mike C. Combined sharpeners for knives and fish hooks and hook disgorger. 3,718,938, Cl. 7-1.00h.
Bode, Gerd B. Heated wiper blade. 3,718,940, Cl. 15-250.060.
Bode, James D., to Bendix Corporation, The. Reaction chamber heated device for oxygen generation. 3,719,456, Cl. 23-281.000.
Bodine, Norman R.; and Noetzelmann, David C., Sr., to Midwec Corporation. Interlocking case for electronic components. 3,719,272, Cl. 206-65.00f.
Bohannon, James P.; and McAfee, Loyd O., said Bohannon assor. to said McAfee, Loyd O. Automotive suspension ball joint checking method. 3,719,346, Cl. 254-1.000.
Bohner, Thomas H.: *See*—
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Boise Cascade Corporation, mesne: *See*—
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Boissier, Jacques Robert; and Ratouis, Roger, to Societe Anonyme dite; Societe Industrielle Pour la Fabrication des Antibiotiques (S.I.F.A.). 9-(1-Piperazinyl)-9,10-dihydro-9,10-et hanoanthracenes and their salts. 3,719,679, Cl. 260-268.0pc.

Boler, Leonard J.: *See—*
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Bolomier, Elisabeth: *See—*
Bolomier, Jacques; Bolomier, Elisabeth; and Bolomier, Jean-Pierre, 3,719,795.

Bolomier, Jacques; Bolomier, Elisabeth; and Bolomier, Jean-Pierre. Electric steam generator. 3,719,795, Cl. 219-272.000.

Bolomier, Jean-Pierre: *See—*
Bolomier, Jacques; Bolomier, Elisabeth; and Bolomier, Jean-Pierre, 3,719,795.

Bonjour, Georges: *See—*
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Bookwalter, George N.: *See—*
Robinson, John W.; Bookwalter, George N.; and Tuschhoff, John V., 3,719,661.

Booth, Frederick E., Jr., to Houdaille Industries Inc. Linear digital-to-analog converter. 3,719,808, Cl. 235-154.

Boppart, Eugene A., to Velsicol Chemical Corporation. Greenhouse planting box. 3,719,301, Cl. 217-5.00r.

Borochaner, Stuart, to National Waterpure Corporation. Water-softening unit. 3,719,594, Cl. 210-190.000.

Borsutzki, Eberhard; and Liehmann, Gerhard. Vibration generator. 3,719,094, Cl. 74-87.000.

Bosch, Robert, G.m.b.H.: *See—*
Eheim, Franz, 3,719,435.
Hofmann, Eberhard; and Staudt, Heinrich, 3,719,208.

Boschen, John A.; and Stanecki, Patrick J., to Ford Motor Company. Seatback latch and recliner mechanism. 3,719,387, Cl. 297-355.000.

Bose, Georg Wilhelm, to Moeller & Neumann G.m.b.H. Device for cross feeding individual curved rolled rods or bars. 3,719,285, Cl. 214-1.00p.

Bosniack, David S.; and Shaub, Harold, to Esso Research and Engineering Company. Lubricant composition containing polycarboxylic acid. 3,719,600, Cl. 252-56.00s.

Bosshardt, Rolf: *See—*
Bickel, Hans; Bosshardt, Rolf; and Mueller, Johannes, 3,719,673.

Boston, Thomas R.: *See—*
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Bott, Helmuth, to Porsche, Dr.-Ing. H.c.F., K.G., Firma. Device in vehicles, particularly automotive vehicles, for skid prevention. 3,719,246, Cl. 180-103.000.

Bottoms, William A., to Eaton Yale & Towne Canada Limited. Method and apparatus for delimbing a tree. 3,719,217, Cl. 144-2.00z.

Boyer, Marcel-Louis, to Compagnie Industrielle des Telecommunications CIT-ALCATEL. High-speed band reading device. 3,719,802, Cl. 235-61.11r.

Boynton, Richard P.; and Ellis, Robert C., Jr., to Sperry Rand Corporation. Servo compensation including a non-linear synchro transmitter. 3,719,880, Cl. 318-633.000.

Bozeman, Paul Preston: *See—*
Brasher, James Alan; Bozeman, Paul Preston; and Odell, Norman Raymond, 3,719,585.

Bracey, Kenneth Edward George: *See—*
Dawson, Lindsay Grahame; Petrie, James Alexander; and Bracey, Kenneth Edward George, 3,719,439.

Bradu, Georges M., to Societe des Verreries Industrielles Reunies du Loing. Cathode ray tubes for color TV receivers having a post-acceleration grid electrode. 3,719,848, Cl. 313-855.000.

Brady, John Gary: *See—*
Szabo, Karoly; and Brady, John Gary, 3,719,755.

Bragg, Eric William, to Post Office, The. Circuit arrangement for reducing spurious signals picked up by transmission line. 3,719,904, Cl. 333-12.000.

Bragg, Ralph J.; and Rothfelder, Raymond E., to Grace, W. R., & Co. Sprayable gypsum plaster composition. 3,719,513, Cl. 106-114.000.

Brantly, Thomas B., to Eastman Kodak Company. Electrophotographic compositions and elements. 3,719,480, Cl. 96-1.0pc.

Brasher, James Alan; Bozeman, Paul Preston; and Odell, Norman Raymond, to Texaco Inc. Solvent dewaxing with separation of solvent by liquid-liquid extraction. 3,719,585, Cl. 208-33.000.

Brastad, William A., to General Mills, Inc. Easily openable carton with elongated adherence areas near the side edges of the overlapped flap. 3,719,317, Cl. 229-51.0wb.

Breaux, Onezime P. Stabilized, optimizable, gaseous electrical discharge. 3,719,899, Cl. 331-94.500.

Breene, James D.: *See—*
Barnum, Phillip R., 3,719,782.

Bregeault, Marc, to Thomson-CSF. D.C. motor with series connected windings. 3,719,870, Cl. 318-138.000.

Breitschwdt, Werner; Gmeiner, Gunter; Grabner, Christian; and Sigmund, Gerhard, to Daimler-Benz Aktiengesellschaft. Door lock, especially for motor vehicles. 3,719,248, Cl. 180-112.000.

Breitschwerdt, Werner; Gmeiner, Gunter; and Stolz, Albert, to Daimler-Benz Aktiengesellschaft. Installation for controlling the temperature of vehicle interior spaces. 3,719,135, Cl. 98-2.070.

Bretthauer, Jurgen: *See—*
Focke, Heinz; and Bretthauer, Jurgen, 3,719,018.

Breuning, Ernst. Method and apparatus for cooling foods contained in portion containers. 3,718,981, Cl. 34-33.000.

Bridegum, James Earl. Drain fitting. 3,719,345, Cl. 251-351.000.

Brindejonc de Treglode, Pierre. Slings, tow-ropes and the like. 3,718,945, Cl. 24-73.000.

Briotet, Jean Paul Francois Gilbert; and Ravagli, Armand, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Control devices for gas turbine power plants. 3,719,047, Cl. 60-239.000.

Britain, J. W.: *See—*
Reetz, Theodor; and Britain, J. W., 3,719,639.

British Nuclear Design & Construction Limited: *See—*
Charcharos, Anthreas Nicholas; and Williamson, Clifford, 3,719,172.

Brockman, Edwin. Paint touch-up capsule. 3,719,460, Cl. 51-181.000.

Brogren, Erik E.: *See—*
Arne, Christian; and Brogren, Erik E., 3,719,048.

Broling, Keith W., to Portec, Inc. Turntable tie-down winch. 3,719,156, Cl. 105-369.00a.

Brooks, Frederick J., to Astrotronic Research, Ltd. Burner for combustible material. 3,719,171, Cl. 122-2.000.

Brooks, Ralph J. Mobile air pollution reduction system and method. 3,719,028, Cl. 55-85.000.

Brown, Boveri & Company Limited: *See—*
Mottier, Francois, 3,719,076.

Brown, Lawrence W.; and Piester, Leroy E., to Centuri Engineering Company, Inc. Recovery device ejection baffle system for minature rockets. 3,719,145, Cl. 102-34.400.

Brown, Thelma Burnice. Dumping rate controlling tailgate for a dump vehicle. 3,719,298, Cl. 214-509.000.

Browning Industries, Inc.: *See—*
Hartog, Thomas J., 3,718,998.

Brucker, William S. Rotary cutting tool. 3,718,958, Cl. 29-103.00r.

Brugger, Franz: *See—*
Worner, Otto; Brugger, Franz; and Weller, Erwin, 3,719,916.

Bruner, James D.: *See—*
Richter, Albert P., Jr.; Bruner, James D.; and Cox, Percy T., 3,719,239.

Brunie, Jean Claude; Costantini, Michel; Crenne, Noel; and Jouffret, Michel, to Rhone-Poulenc S.A. Process for obtaining 6-hexanaloic acid. 3,719,706, Cl. 260-533.00c.

Bryan, Roland J., Jr.: *See—*
Martin, Donald H.; Holmer, Donald A.; Durant, Dennis J.; Bryan, Roland J., Jr.; Saunders, James H.; and Black, William B., 3,719,547.

Bryans, Alexander Connor: *See—*
Blair, Lawrence William; and Bryans, Alexander Connor, 3,719,430.

Bryant Grinder Corporation: *See—*
Schroeder, Roger L., 3,719,931.

Buchel, Karl Heinz; Grewe, Ferdinand; Scheinpflug, Hans; Kaspers, Helmut; and Regel, Erik, to Farbenfabriken Bayer Aktiengesellschaft. N-trityl-imidazolium salts as a fungicide. 3,719,760, Cl. 424-273.000.

Buchtel, Dean H.; Lappin, Kenneth R.; and Maurer, John A., to Weber Dental Company, The. Dental handpiece drip control system. 3,718,974, Cl. 32-22.000.

Buchtel, Dean H.; Lappin, Kenneth R.; and Maurer, John A., to Weber Dental Manufacturing Company, The. Dental drinking cup filling apparatus. 3,719,308, Cl. 222-70.000.

Buckeye Steel Castings Company: *See—*
Reynolds, David J., 3,719,154.

Buckman Laboratories, Inc.: *See—*
Buckman, Stanley J.; and Pera, John D., 3,719,509.

Buckman, Stanley J.; and Pera, John D., to Buckman Laboratories, Inc. Method of stabilizing polymeric organic compositions with 3',5'-dibromo-2'-hydroxyacetophenone. 3,719,509, Cl. 106-15.0fp.

Bucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, to Roussel UCLAF. 7α-Methyl-13β-alkyl-17α-hydrocarbyl-17β-oxy-Δ^4 9,11-gonatrene-3-ones. 3,719,691, Cl. 260-397.450.

Bucyrus-Erie Company: *See—*
Mains, Donald M., 3,719,872.

Budris, Albert P.; and Carrieri, Louis F., to U.S. Industries, Inc. Workpiece transfer device. 3,719,270, Cl. 198-219.000.

Buisson, Claude; and Delaunay, Jean-Pierre, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Method and device for forming a stream of material consisting of tangled shreds such as tobacco. 3,719,289, Cl. 214-17.0ca.

Buisson, Michel; and Durand, Daniel. Polyurethanes prepared from polyhydroxy condensates of isocyanuric acid. 3,719,615, Cl. 260-2.5aw.

Bukhman, Aron Borukhovich; Drovenkov, Evgeny Alexandrovich; Ivaschenko, Felix Alexandrovich; Aizenshtein, Aron Meerovich; and Yanushkevich, Igor Lvovich. Antenna system for VHF and UHF radio direction finders. 3,719,950, Cl. 343-788.000.

Bulova Watch Company, Inc.: *See—*
Peduto, Ralph; and Prak, Jan Willem L., 3,719,838.

Bulow, Manfred: *See—*
Katz, Klaus; and Bulow, Manfred, 3,719,124.

Bunnell, Fred H.: *See—*
Van Koevering, Barry D.; Blough, William M., Jr.; Bunnell, Fred H.; McDowell, William B.; and McDowell, George E., 3,718,978.

Burbick, Ross E.: *See—*
Anderson, Dean M.; and Burbick, Ross E., 3,719,194.

Burckhardt, Manfred H.; Lutze, Walter; and Schwerdt, Paul, to Daimler-Benz Aktiengesellschaft. High frequency transmitter, especially for brake slippage control installation of motor vehicles. 3,719,840, Cl. 310-71.000.

Burcz, Lawrence D.; and Lemieux, George E., to Ford Motor Company. Clutch with torque responsive valve. 3,719,259, Cl. 192-54.000.

Burgess, Charles David, to Simon-Carves, Limited. Traveling grate machines. 3,719,354, Cl. 266-21.000.

Burgess, Thomas H., to Fischer & Porter Co. Sensor probe and shield assembly for swirl-type flowmeter. 3,719,080, Cl. 73-194.00b.

Burke, Oliver W., Jr. Aqueous latices of high polymer compositions and processes and means for the production thereof. 3,719,572, Cl. 204-159.150.

Burke, Oliver W., Jr. Silica pigments and preparation thereof. 3,719,741, Cl. 423-339.000.

Burke, Zane L. Production of copper oxides and zinc oxide. 3,719,451, Cl. 423-604.000.

Burley, Harvey A., to General Motors Corporation. Dual mode spark plug. 3,719,851, Cl. 313-123.000.

Burley, John Charles, to Ackerman, Myron. Stabilising woven fabrics. 3,719,450, Cl. 8-149.200.

Burrage, Lawrence M.; and McStrack, Darrel D., to McGraw-Edison Company. Apparatus for producing wet process ceramic bodies. 3,719,581, Cl. 204-299.000.

Burroughs Corporation: *See—*
Ananiades, Constantine S., 3,719,830.
Behr, Michael I.; Coon, Lewis B., Jr.; and Bickel, Charles E., 3,719,934.
Lawrence, Robert, 3,719,860.

Burroughs, J. P., & Son, Inc.: *See—*
Keely, Richard Thomas, 3,719,502.

Burton, Cyril; and Steeves, Douglas. Underwater saw for tree and stump removal. 3,719,116, Cl. 83-483.000.

Burton, Douglas G.; and Kiger, Norman L. Thermo plastic tubing furniture. 3,719,389, Cl. 297-440.000.

Bustin, Leopold. Pinless hinge. 3,718,943, Cl. 16-178.000.

Buzzell, Harold O., to Polaroid Corporation. Novel adhesive and optical devices laminated therewith. 3,719,544, Cl. 161-1.000.

Cade, Ronald L.; and Knapp, John F., to Xerox Corporation. Plural electrode development apparatus. 3,719,169, Cl. 118-636.000.

Cadorette, Raymond; and Eckert, George, to Texaco Inc. Fuel composition. 3,719,458, Cl. 44-72.000.

Cahn, Robert P.: *See—*
Li, Norman H.; and Cahn, Robert P., 3,719,590.

California Injection Molding Co., Inc.: *See—*
Van de Walker, Roger D.; and Howe, Blair E., 3,719,396.

Callahan, James L.: *See—*
03/06/73; Grasselli, Robert K.; and Callahan, James L., 3,719,528.

Calzaturificio Tecnica dei F LLI Zanatta S.N.C.: *See—*
Spier, I. Martin, 3,718,994.

Campbell, John David; and McCann, Robert E., to Dykema, Charles M.; trustee and United States of America, Small Business Administration. Compact rotary well drilling rig with hydraulic swivel pull down mechanism. 3,719,238, Cl. 173-147.000.

Campbell, Norman Bernard; and Wells, Ross Nelson Frederick, to Union Carbide Canada Limited. Polycarbonamide having improved basic dye receptivity. 3,719,641, Cl. 260-78.00a.

Canadian General Electric Company Limited: *See—*
Eastcott, Peter de Hertel; and Welch, James Ernest, 3,719,099.

Cannella, Joseph L., to Berg Manufacturing Company, The. Force adjustable actuator. 3,719,125, Cl. 92-133.000.

Cantz, Rolf J., to Kennametal Inc. Tire stud having porous impregnated body. 3,719,478, Cl. 75-208.00r.

Capic-Etablissements Caillarec: *See—*
Pere, Francois Caillarec, 3,719,180.

Capossela, Anthony C., Jr.: *See—*
Rispoli, Joseph M.; and Capossela, Anthony C., Jr., 3,719,501.

Cappon, Arthur M., to Sperry Rand Corporation. Bit organized integrated MNOS memory circuit with dynamic decoding and store-restore circuitry. 3,719,932, Cl. 340-173.00r.

Carborundum Company, The: *See—*
Lawler, Harry A., 3,719,545.

Carcia, Calixto Fortunato, to Jackson, Byron, Inc. Method of selectively stimulating oil wells, compositions therefor, and methods of making such compositions. 3,719,228, Cl. 166-281.000.

Carco, Inc.: *See—*
Study, Jon A., 3,719,111.

Cardell, Olof: *See—*
Soderstrom, Sten Hilding; and Cardell, Olof, 3,718,960.

Carding Specialists (Canada) Limited: *See—*
Varga, John Maximilian Jules, 3,719,122.

Carli, Alvin J., to Alliance Manufacturing Company, Inc., The. Door operator reversing control. 3,719,005, Cl. 49-28.000.

Carlson, Lloyd: *See—*
Schmitt, Robert A.; Betts, Gary W.; Johnson, Forrest H.; and Carlson, Lloyd, 3,719,288.

Carlson, Robert G.; and Steinhagen, Carl A., to General Electric Company. Method of forming a composite metallic preform tape. 3,719,538, Cl. 156-179.000.

Carlsten, Ronald W.; and Nissen, Donald A., to United States of America, Atomic Energy Commission. Thermal battery. 3,719,527, Cl. 136-85.00t.

Carpenter, Robert Gordon; Lindbloom, Eric; and McMahon, Maurice Thomas, Jr., to International Business Machines Corporation. Statistical logic test system having a weighted random test pattern generator. 3,719,885, Cl. 324-73.00r.

Carr, George W., to Pullman Incorporated. Chassis-to-container locking means. 3,719,385, Cl. 296-35.00a.

Carrier Corporation: *See—*
Miller, Charlie D., 3,718,966.

Carrieri, Louis F.: *See—*
Budris, Albert P.; and Carrieri, Louis F., 3,719,270.

Carteels, Florent: *See—*
Habraken, Louis; Leroy, Vincent; Meulemans, Marcel; and Carteels, Florent, 3,719,475.

Carver, Fred F., to Singer Company, The, mesne. Aircraft sound simulation system. 3,718,987, Cl. 35-12.00q.

Cash, George H. Induction condenser. 3,719,032, Cl. 55-264.000.

Cason, George A.: *See—*
Young, James W.; Cason, George A.; and Kunkel, Ernest O., 3,719,240.

Caterpillar Tractor Company: *See—*
Davis, Warren W., 3,719,427.

Cavis, Thomas C., to Trane Company, The. Cooling apparatus. 3,719,059, Cl. 62-285.000.

Cebalo, Tony, to Air Products and Chemicals, Inc. Thiophosphate derivatives of triazoline thiones. 3,719,686, Cl. 260-308.00c.

Cement Enamel Development, Inc.: *See—*
DeLange, Cornelis J., 3,719,011.

Centre d'Etude de l'Energie Nucleaire: *See—*
Habraken, Louis; Leroy, Vincent; Meulemans, Marcel; and Carteels, Florent, 3,719,475.

Centre National de Recherches Metallurgiques: *See—*
Habraken, Louis; Leroy, Vincent; Meulemans, Marcel; and Carteels, Florent, 3,719,475.

Centuri Engineering Company, Inc.: *See—*
Brown, Lawrence W.; and Piester, Leroy E., 3,719,145.

Cerva, Alexander; and Tomasovic, Milan, to Vyskumny ustav Mechanizacie a Automatizacie Nove. Nozzle for a pneumatic-hydraulic head for cleaning of molds for pressure casting of metal. 3,719,325, Cl. 239-405.000.

Chamberlain, John, to United Aircraft Corporation. Fuel injection means. 3,719,042, Cl. 60-39.74r.

Chamberlin, Roger S.: *See—*
Kemp, Ray F.; Blanchard, Robert R.; and Chamberlin, Roger S., 3,719,230.

Chance, Leon H.; and Moreau, Jerry P., to United States of America, Agriculture. Organo-phosphorus compounds containing perfluoroalkyl radicals and their application to cellulosic textiles. 3,719,448, Cl. 8-116.00p.

Chancy, Preston E.; and Rhodes, Charles F., Jr., to Sun Oil Company. Telemetering system for rotating body. 3,719,935, Cl. 340-206.000.

Charcharos, Anthreas Nicholas; and Williamson, Clifford, to British Nuclear Design & Construction Limited. Boiler systems of the water tube type. 3,719,172, Cl. 122-7.00r.

Charlson, Robert J.: *See—*
Ahlquist, Norman C.; and Charlson, Robert J., 3,719,810.

Charron, Louis Donald: *See—*
McLean, John; and Charron, Louis Donald, 3,718,971.

Chem-Therm Mfg. Co.: *See—*
Andersen, Dan A., 3,719,151.

Chemische Fabrik Aubing Dr. Kurt Bloch Nachf.: *See—*
Teichert, Peter; and Vogel, Hans-Ludwig, 3,719,688.

Chen, David T. Y.; and Shih, Ten Fuh. Articles of white food for feeding aquatic animals and method of manufacture. 3,719,496, Cl. 99-2.00r.

Cherio, Vittoria; and Mignone, Giuseppe. Device for filling foodstuff into netted containers. 3,719,022, Cl. 53-255.000.

Cherne Industrial, Inc.: *See—*
Cherne, Lloyd G.; Boler, Leonard J.; and Matthews, Ernest E., 3,719,353.

Cherne, Lloyd G.; Boler, Leonard J.; and Matthews, Ernest E., to Cherne Industrial, Inc. Liquid cooling system, apparatus and method. 3,719,353, Cl. 261-90.000.

Cheshire, Alan Gillingham: *See—*
Place, Harold; and Cheshire, Alan Gillingham, 3,719,326.

Chevron Research Company: *See—*
Larimore, David B.; and Christensen, Robert I., 3,719,740.
Marquis, David M., 3,719,704.
Muir, Francis; and Morrison, Jerry L., 3,719,924.
Salka, Arnold I., 3,719,027.
Smith, Calvin S.; and McLeod, William J., 3,719,749.

Chicago Bridge & Iron Company: *See—*
Arne, Christian; and Brogren, Erik E., 3,719,048.

Chihiro, Hayashi: *See—*
Okamoto, Toyohiko; Chihiro, Hayashi; and Nishiguchi, Masaru, 3,719,066.

Chisso Corporation: *See—*
Abe, Iwao, 3,719,273.

Christensen, Robert I.: *See—*
Larimore, David B.; and Christensen, Robert I., 3,719,740.

Christianson, Raymond A., to Under Sea Industries, Inc. Audio reserve alarm mechanism for self-contained breathing apparatus. 3,719,160, Cl. 116-70.000.

Christoffel, Cla: *See—*
Schobinger, Ulrich; Christoffel, Cla; and Berner, Kurt, 3,719,617.

Ciba-Geigy Corporation: *See—*
Bickel, Hans; Bosshardt, Rolf; and Mueller, Johannes, 3,719,673.
Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., 3,719,709.
Heusler, Karl; Robert Burns; and Ernest, Ivan, 3,719,672.
Lucas, Robert Armistead; and Blatter, Herbert Morton, 3,719,678.

Robison, Michael Mullen; and Finch, Neville, 3,719,683.

Cieciuch, Ronald F. W.; Luhowy, Roberta R.; Meneghni, Frank A.; and Rogers, Howard G., to Polaroid Corporation. Novel photographic processes and products. 3,719,489, Cl. 96-29.00d.

Circle F Industries, Inc.: *See*—
Tibolla, Julius F., 3,719,919.

Clark, Carl C. Retro-rocket braking system for land vehicles. 3,719,256, Cl. 188-2.00r.

Clark, Edward Watson. Textile fibre combing machines. 3,718,944, Cl. 19-123.000.

Clark, William H.; Greenlee, Thomas W.; and Toporcer, Louis H., to Dow Corning Corporation. Room temperature vulcanizable silicone elastomers containing metal hydrocarbonoxides. 3,719,634, Cl. 260-46.50g.

Clark, William H.; Greenlee, Thomas W.; and Toporcer, Louis H., to Dow Corning Corporation. Metal hydrocarbonoxides in room temperature vulcanizable silicone elastomers. 3,719,635, Cl. 260-46.50g.

Clarke, Geoffrey, to Square D Company. Oscillator proximity detector with removable interchangeable sensing heads. 3,719,898, Cl. 1-22-71.

Clauss, Richard J.: *See*—
Klein, Roy W.; Tremmel, Robert A.; and Clauss, Richard J., 3,719,568.

Cleevely, Bruce T., to Wheeling Stamping Company. Mold assembly for producing threaded articles with unscrewing means integral with the assembly. 3,719,446, Cl. 425-249.000.

Cline, Richard F.; and Wilton, Donald P., to United States of America, Health, Education and Welfare. Binary amino ovicidal composition. 3,719,763, Cl. 424-325.000.

Coal Industry (Patents) Limited: *See*—
Hartley, Dennis, 3,719,394.

Coats, Robert Reid; Greenway, John Michael; and Glen, William, to Imperial Chemical Industries Limited. Heat treatment of yarns. 3,718,953, Cl. 28-72.100.

Coffre, Philippe: *See*—
Darmon, Jacques; and Coffre, Philippe, 3,719,816.

Coho, Owen C., to General Electric Company. Thrust control for linear motors. 3,719,869, Cl. 318-135.000.

Colburn, John P. Piano instruction device. 3,719,118, Cl. 84-478.000.

Cole, Herbert Charles, to United Kingdom Atomic Energy Authority. Hall current accelerator adapted for injection of ions into plasma confinement system. 3,719,554, Cl. 176-3.000.

Colorado Springs National Bank: *See*—
Lundin, Charles E.; and Turkisher, Robert, 3,719,477.

Columbia Broadcasting Systems, Inc.: *See*—
Sharp, Paul H., 3,719,857.

Columbia Machine, Inc.: *See*—
Schmitt, Robert A.; Betts, Gary W.; Johnson, Forrest H.; and Carlson, Lloyd, 3,719,288.

Commissariat a l'Energie Atomique: *See*—
Leclou, Andre, 3,719,558.

Commonwealth Scientific and Industrial Research Organization: *See*—
Kelsall, Denis Fletcher; and Restarick, Clifford John, 3,719,089.

Compagnie des Compteurs: *See*—
Poilleux, Jean-Loup; and Tourret, Jean, 3,719,421.

Compagnie Francaise des Petroles: *See*—
Serrano, Francisco M., 3,719,374.

Compagnie Industrielle des Telecommunications CIT-ALCATEL: *See*—
Boyer, Marcel-Louis, 3,719,802.

Conklin, George W.: *See*—
McClure, James D.; and Conklin, George W., 3,719,699.

Conley, Joseph W., to Hercules Incorporated. Benzidine yellow type pigment. 3,719,658, Cl. 260-176.000.

Continental Can Company, Inc.: *See*—
Stone, James N., 3,719,654.

Continental Oil Company: *See*—
Jacocks, Claud L., 3,719,601.

Control Data Corporation, mesne: *See*—
Patel, Pravin K.; and Liu, Joo H., 3,719,525.

Cooke, Brian Frederick, to Nuclear Power Group Limited, The. Devices for sensing the relative location of two bodies. 3,719,072, Cl. 73-37.500.

Coon, Lewis B., Jr.: *See*—
Behr, Michael I.; Coon, Lewis B., Jr.; and Bickel, Charles E., 3,719,934.

Cooper, Charles Frank: *See*—
Dorril, David Trevor; and Cooper, Charles Frank, 3,719,553.

Corbige, Orin K.: *See*—
Blaetz, Philip H.; and Corbige, Orin K., 3,719,138.

Costantini, Michel: *See*—
Brunie, Jean Claude; Costantini, Michel; Crenne, Noel; and Jouffret, Michel, 3,719,706.

Cox, Ernest P. Apparatus for breaking wood waste into short pieces. 3,719,314, Cl. 225-97.000.

Cox, Percy T.: *See*—
Richter, Albert P., Jr.; Bruner, James D.; and Cox, Percy T., 3,719,239.

Coyne, William E.: *See*—
Mendel, Arthur; and Coyne, William E., 3,719,687.

Crane Co.: *See*—
Crits, George J., 3,719,591.

Crank, George, to Lilly Industries Limited. Anti-inflammatory oxazolo triazine compounds. 3,719,676, Cl. 260-248.0ns.

Crenne, Noel: *See*—
Brunie, Jean Claude; Costantini, Michel; Crenne, Noel; and Jouffret, Michel, 3,719,706.

Criddle, Ernest E., to Minister of National Defence, of Canada as represented by the, Her Majesty the Queen in right of. Method and means for providing a clean area. 3,719,136, Cl. 98-36.000.

Cripe, Maxwell L., to Bendix Corporation, The. Vacuum powered spring brake. 3,719,043, Cl. 60-54.50p.

Cripe, Maxwell L., to Bendix Corporation, The. Frictional lock for dual ratio pedal device. 3,719,123, Cl. 91-391.000.

Crits, George J., to Crane Co. Method for condensate filtration and demineralization. 3,719,591, Cl. 210-33.000.

Crivellaro, Gianbattista; and Oldani, Francesco, to Gruppo Lepetit S.p.A. Solid lubricant composition and method of preparation. 3,719,599, Cl. 252-46.400.

Cross, Donald E.; and Blackburn, William E., to Owens-Corning Fiberglas Corporation. Tool holder. 3,719,579, Cl. 204-286.000.

Cross, John Valentene: *See*—
Walmsley, Martin Francis; and Cross, John Valentene, 3,719,500.

Crowell, John Arnold, to Du Pont de Nemours, E. I., and Company. Sheet drying apparatus. 3,718,983, Cl. 34-156.000.

Cryogenic Engineering Company: *See*—
Draper, James W.; and Edwards, Lowell N., 3,719,200.

Cuccaro, Louis M. Apparatus for applying a fastening device. 3,719,792, Cl. 219-230.000.

Cummins Engine Company, Inc.: *See*—
Waygood, James J., 3,719,058.

Cutts, James H.: *See*—
Hawkins, George C.; and Cutts, James H., 3,718,963.

Dahlstrom, Leif Key Tommy: *See*—
Rasmusson, Stig Arne Rasmus; Dahlstrom, Leif Key Tommy; and Thelander, Ernst Georg, 3,719,284.

Dahme, Wolfgang: *See*—
Hauschild, Ulrich; Holst, Rudolf; Kaspers, Hans-Heinz; and Dahme, Wolfgang, 3,719,464.

Dailey Irrigation Co., Inc.: *See*—
Swain, C. Winston; and Dailey, Louis E., Jr., 3,719,293.

Dailey, Louis E., Jr.: *See*—
Swain, C. Winston; and Dailey, Louis E., Jr., 3,719,293.

Daimler-Benz Aktiengesellschaft: *See*—
Breitschwdt, Werner; Gmeiner, Gunter; Grabner, Christian; and Sigmund, Gerhard, 3,719,248.
Breitschwerdt, Werner; Gmeiner, Gunter; and Stolz, Albert, 3,719,135.
Burckhardt, Manfred H.; Lutze, Walter; and Schwerdt, Paul, 3,719,840.
Katz, Klaus; and Bulow, Manfred, 3,719,124.
Korinth, Hans, 3,719,134.
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Dainippon Ink and Chemicals, Incorporated: *See*—
Murakami, Yoichi; and Watanabe, Hikaru, 3,719,725.

Daley, Francis Darnall, Jr., to Electronic Modules Corporation. Digital linearizer and method. 3,719,807, Cl. 235-92.0pl.

Damon Corporation: *See*—
Bannister, John D.; Peters, Joseph C.; and Jordan, Michael, 3,719,086.

Danfoss A/S: *See*—
Abildtrup, Jorgen, 3,719,796.

Danielis, Joseph U. Brick composition. 3,719,512, Cl. 106-106.000.

Daniels, Clare G.; and Mazelsky, Bernard, to ARA, Inc. Energy absorbing device. 3,719,255, Cl. 188-1.00c.

Daniels, Ruthven H.; and Zahka, Joseph G., to Durham Associates, Inc. Oil spillage detection system. 3,719,936, Cl. 340-236.000.

Danly Machine Corporation: *See*—
Sindelar, William E., 3,719,445.

Dao, Tich T., to Ampex Corporation. Clock pulse jitter correcting circuit. 3,719,834, Cl. 307-269.000.

Darmon, Jacques; and Coffre, Philippe, to Jeumont-Schneider. System for monitoring the decoding of an address. 3,719,816, Cl. 235-153.0am.

Dart Industries, Inc.: *See*—
Knight, Ralph M., 3,719,643.

Dartois, Clement Rahmin. Safety harnesses. 3,718,948, Cl. 24-75.000.

Davee, Lawrence W. Selective single lens projecting system. 3,719,419, Cl. 353-101.000.

Davidson, Glenn G., to Platemakers Educational & Research Institute. Apparatus for calculating halftone screen exposures. 3,719,806, Cl. 235-64.700.

Davis, Grover L., to General Electric Company. Irradiation test facility. 3,719,555, Cl. 176-17.000.

Davis, Robert L., to General Tire & Rubber Company, The. Fluid pressure condition warning device. 3,719,159, Cl. 116-34.000.

Davis, S Jack: *See*—
Emerson, Paul D.; Davis, S Jack; Oatfield, John C.; Engelman, Fred H.; and Bartee, Charles E., 3,719,210.
Emerson, Paul D.; Davis, S. Jack; Oatfield, John C.; Engelman, Fred H.; and Bartee, Charles E., 3,719,212.

Davis, Warren W., to Caterpillar Tractor Company. Variable area nozzle for turbines or compressors. 3,719,427, Cl. 415-147.000.

Dawans, Francois, to Institut Francais du Petrole des Carburants et Lubrifiants. Nickel π-allyl halogenoacetates, their use as catalysts for the stereospecific polymerization of unsaturated organic compound. 3,719,653, Cl. 260-94.300.

Dawson, Juan C.: *See—*
Krulikoski, Stanley J., Jr.; and Dawson, Juan C., 3,719,420.

Dawson, Lindsay Grahame; Petrie, James Alexander; and Bracey, Kenneth Edward George, to Rolls-Royce Limited. Bladed rotor for a gas turbine engine. 3,719,439, Cl. 416-196.000.

Day, Lawrence E.; and Ellis, Lee F., to Lilly, Eli, and Company. Process for producing interferon-inducing particles and composition containing said particles. 3,719,754, Cl. 424-177.000.

DBM Industries Limited: *See—*
Muri, George, 3,719,115.

De Lalio, Louis: *See—*
Rheingold, Lawrence M.; Berlin, Milton; De Lalio, Louis; and Schierwagen, Alfred, 3,719,536.

De Marco, Salvador S.; and Harper, Ernest A., to Phillips Petroleum Company. Liquefaction and purification system. 3,719,053, Cl. 62-38.000.

De Packh, David C., to United States of America, Navy. System and method for accelerating charged particles utilizing pulsed hollow beam electrons. 3,719,893, Cl. 328-233.000.

De Staat der Nederlanden, Ten Deze Vertegenwoordigd door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie: *See—*
Kraaijenbrink, Hans, 3,719,774.

Deaton, Homer W., to General Motors Corporation. Excess lint indicator for a clothes dryer. 3,718,982, Cl. 34-82.000.

Deckert, Helmut: *See—*
Authier, Bernhard; Deckert, Helmut; Hofbauer, Werner; and Bauer, Rudolf, 3,719,271.

Dedenkov, Anatoly Nikolaevich: *See—*
Serebryakov, Nikolai Gennadievich; Dedenkov, Anatoly Nikolaevich; and Kiryakov, Mikhail Akimovich, 3,719,750.

Deggine, Edward R., to Allied Chemical Corporation. Fire fighting method employing solutions of PVa and alkali metal borate. 3,719,515, Cl. 117-3.000.

DeLange, Cornelis J., to Cement Enamel Development, Inc. Frameless fascia-soffit assembly. 3,719,011, Cl. 52-73.000.

Delaunay, Jean-Pierre: *See—*
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Dellelce, Nicholas: *See—*
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Delphin, Pierre P., to Thomson-CSF. System for feeding electromagnetic energy into a cyclotron and a cyclotron incorporating such system. 3,719,894, Cl. 328-234.000.

Demag Aktiengesellschaft: *See—*
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Den Boer, Jean A. Device for regulating the humidity of the air in a musical instrument. 3,719,033, Cl. 55-387.000.

Den-Tal-EZ Mfg. Co.: *See—*
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Dennis, Charles L., to Mobil Oil Corporation. Regulating circuit for a pulsed neutron source. 3,719,827, Cl. 250-84.500.

Dennis, David S.: *See—*
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Dental Designs: *See—*
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Design Systems, Inc.: *See—*
Streander, George W., 3,719,103.

Dessoy, Peter Martin Robert, to Ronson Corporation. Gas fuelled lighters. 3,719,447, Cl. 431-254.000.

Dettmering, Wilhelm Heinrich. Jet engine for hypersonic intake velocities. 3,719,428, Cl. 415-181.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Thiele, Kurt, 3,719,762.

Deutscher, Hans-Christian; and Bauer, Kurt, to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH. Windshield wiper for circular headlamps. 3,718,941, Cl. 15-250.230.

Di Martino, John: *See—*
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Diagraph-Bradley Industries, Inc.: *See—*
Hammel, Larry F., 3,719,140.

Diamond Shamrock Corporation: *See—*
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Temple, Ralph E.; and Gooding, William T., Jr., 3,719,510.

Dian, Walter, to Excel, Inc. Bicycle brake applying device. 3,719,104, Cl. 74-489.000.

Dickey, James W.; and Youngblood, John B., to General Electric Company. Panel display device having unitary molded casing. 3,719,941, Cl. 340-381.00r.

Diebold, Incorporated: *See—*
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Dieringer, James V., to Tenneco Inc. Multiple application sealing means for fluid filters. 3,719,281, Cl. 210-440.000.

Diffenbach, Richard A.; and Heavens, Thomas H., to Grace, W. R., & Co. Method for producing aluminum alloy shaped particles and active Raney catalysts therefrom. 3,719,732, Cl. 264-9.000.

Dinges, Karl: *See—*
Schuster, Herbert; Nutzel, Karl; Dinges, Karl; and Ott, Karl-Heinz, 3,719,731.

Display Corporation International: *See—*
Finger, Otto R., 3,719,000.

Dochterman, Richard W., to General Electric Company. Dynamoelectric machine cooling arrangement. 3,719,843, Cl. 310-89.000.

Domenico, Penelope B., to Dow Chemical Company, The. (Thio-, sulfinyl-and sulfonyl) containing pyridine compounds. 3,719,682, Cl. 260-294.80f.

Dorril, David Trevor; and Cooper, Charles Frank, to Morganite Research and Development Limited. Forming fibrous articles with a vacuum screen former with presser plates for smoothing the outside surfaces. 3,719,553, Cl. 162-227.000.

Dotco, Inc.: *See—*
Snider, Philip A., 3,719,254.
Snider, Philip A., 3,719,440.

Dougherty, Charles B., to TRW Inc. Image transducing system. 3,719,773, Cl. 178-6.000.

Douglas, David. Container and cover therefor. 3,719,304, Cl. 220-42.00c.

Dow Chemical Company, The: *See—*
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Greminger, George K., Jr.; and Glomski, Ronald L., 3,719,651.
Kemp, Ray F.; Blanchard, Robert R.; and Chamberlin, Roger S., 3,719,230.
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Clark, William H.; Greenlee, Thomas W.; and Toporcer, Louis H., 3,719,634.
Clark, William H.; Greenlee, Thomas W.; and Toporcer, Louis H., 3,719,635.
Michael, Keith W.; and Peters, Yolanda A., 3,719,697.

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Downey, Rogers B., to Polaroid Corporation. Apparatus for processing a strip of photographic material. 3,719,309, Cl. 222-101.000.

Doyle, Donald A. Pneumatic control system for vibration detector. 3,719,193, Cl. 137-38.000.

Doyle, James H., to Master Specialties Company. Failure detection circuit. 3,719,937, Cl. 340-251.000.

Drane, John: *See—*
Allen, Robert William; and Drane, John, 3,719,276.

Draper, James W.; and Edwards, Lowell N., to Cryogenic Engineering Company. Vacuum pumpout and pressure relief valve. 3,719,200, Cl. 137-315.000.

Dresser Industries, Inc.: *See—*
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Young, James W.; Cason, George A.; and Kunkel, Ernest O., 3,719,240.

Drexler, Jerome, to Drexler Technology Corporation. Optical overlay method and apparatus with coincidence and non-coincidence registration feature. 3,719,801, Cl. 235-61.12n.

Drexler Technology Corporation: *See—*
Drexler, Jerome, 3,719,801.

Drovenkov, Evgeny Alexandrovich: *See—*
Bukhman, Aron Borukhovich; Drovenkov, Evgeny Alexandrovich; Ivaschenko, Felix Alexandrovich; Aizenshtein, Aron Meerovich; and Yanushkevich, Igor Lvovich, 3,719,950.

Drummer, Max; Michael, Wolfgang; Munch, Werner; and Riegert, Rupert, to Schuler, L., Messrs., GmbH. Press with overhead drive. 3,719,091, Cl. 74-44.000.

Drury, Raymond L., Jr.: *See—*
Hayes, Lester P.; Drury, Raymond L., Jr.; and Grosse, Edward H., 3,719,664.

Du Bois, Thomas C. Camper base and trailer. 3,719,384, Cl. 296-23.0mc.

Du Bose, Charles R.; and Jessup, Harvey A., to North American Rockwell Corporation. Viscous strain gage. 3,719,913, Cl. 338-2.000.

Du Pont de Nemours, E. I., and Company: *See—*
Crowell, John Arnold, 3,718,983.
Flanagan, C. Erman, 3,719,479.
Johnson, Thomas Albert, 3,719,642.
Loux, Harvey M., 3,719,467.
Moore, Earl P., Jr., 3,719,607.

Duclo, Marley J., to Textron Inc. Snowmobile track support system. 3,719,242, Cl. 180-5.00r.

Dukes, Sam E.; and Maki, Edwin C., to North American Rockwell Corporation. Lubricating system for power transmitting apparatus. 3,719,253, Cl. 184-6.120.

Dulaney, George K., to Diebold, Incorporated. Shock absorbing cable connector for pallet loader head. 3,719,349, Cl. 254-135.00r.

Dullabaun, Paul W.: *See—*
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Dunsworth, William K.: *See—*
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Durant, Donald W.: *See—*

Shaw, Clarence W.; and Smith, George R. (said Smith assor. to), 3,719,049.
Durham Associates, Inc.: *See—*
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Dutkewych, Oleh Borys: *See—*
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Dykema, Charles M.; trustee: *See—*
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Dynamit Nobel Aktiengesellschaft: *See—*
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Dzieciuch, Matthew A.; and Weber, Neill, to Ford Motor Company. Cationically-conductive ceramics, their preparation and use. 3,719,531, Cl. 136-153.000.
Eastcott, Peter de Hertel; and Welch, James Ernest, to Canadian General Electric Company Limited. Drive wheel for friction mine hoist. 3,719,099, Cl. 74-230.300.
Eastern Company, The, mesne: *See—*
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Eastman Kodak Company: *See—*
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Trachienberg, William; and Morse, Theodore H., 3,719,165.
Yudelson, Joseph S.; and Gysling, Henry J., 3,719,490.
Easton, Vivian, to Reyrolle Parsons Limited. Dynamo-electric machines. 3,719,844, Cl. 310-184.000.
Easy-Back, Inc.: *See—*
Johnson, Thomas C., 3,719,373.
Eaton Yale & Towne Canada Limited: *See—*
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Eberhard, Everett, to Motorola, Inc. Variable delay, MOS, monostable pulse generating circuit. 3,719,835, Cl. 307-273.000.
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Eckert, George: *See—*
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Eclair International: *See—*
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Edanbob Corporation: *See—*
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Edmunds, John O., to General Motors Corporation. Lock up clutch control. 3,719,093, Cl. 74-645.000.
Edo Western Corporation: *See—*
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Edwards, Lowell N.: *See—*
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Efssel, Dietrich; Hiersign Heinz; Kinzler, Fritz; Russmann, Werner; and Schulz, Helmut, to Lohmann & Stolterfoht Aktiengesellschaft. Highly elastic annular coupler element. 3,719,060, Cl. 64-11.00r.
Eggelsmann, Harry: *See—*
Berends, Werner; Jacob, Heinz-Jurgen; and Eggelsmann, Harry, 3,719,846.
Egnaczak, Raymond K., to Xerox Corporation. Photoelectrophoretic imaging method. 3,719,484, Cl. 96-1.200.
Eheim, Franz, to Bosch, Robert, G.m.b.H. Safety means for a differential pressure valve associated with a fuel injection apparatus. 3,719,435, Cl. 417-307.000.
Ehrgott, Charles Warren, to General Foods Corporation. Coffee extract slush extrusion apparatus. 3,719,506, Cl. 99-275.000.
Eidt, Scott Hubert, to Texas Alkyls, Inc. Novel process for the preparation of alkyl-aluminum halides or alcoholates and trialkylboranes. 3,719,695, Cl. 260-448.00a.
Eisai Co. Ltd.: *See—*
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Elbaum, Saul, to United States of America, Army. Flueric readout system. 3,719,952, Cl. 346-75.000.
Elder, Alton P.; and Taylor, Vincent J., to United States of America, Navy. Rocket launching system. 3,719,120, Cl. 89-1.814.
Electronic Modules Corporation: *See—*
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Elektromessteckni Wilhelm Franz KG: *See—*
Kuhl, Walter Karl; and Wieking, Jens, 3,719,905.
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Emerson, Paul D.; Davis, S Jack; Oatfield, John C.; Engelman, Fred H.; and Bartee, Charles E., said Emerson, said Oatfield, said Engelman and said Bar ee assors. to Monsanto Company. Circular weaving apparatus product and process. 3,719,210, Cl. 139-13.000
Emerson, Paul D.; Davis, S. Jack; Oatfield, John C.; Engelman, Fred H.; and Bartee, Charles E., said Emerson, Oatfield, Engelman and said Bartee assors. to Monsanto Company. Circular weaving apparatus product and process. 3,719,212, Cl. 139-387.000.
Emmerson, Calvin E.; Griffin, Robert A.; and Meginnis, George B., to General Motors Corporation. Seal structure. 3,719,365, Cl. 277-53.000.
Emmons, Donald L.: *See—*
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Endo, Kunio: *See—*
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Endo, Seiji: *See—*
Asao, Hiroshi; Hihara, Takeshi; Endo, Seiji; Furuya, Chikashi; and Sano, Kouhei, 3,719,050.
Endo, Yukio. Device for magnetically regulating each stop position of an intermittently rotating output member. 3,719,839, Cl. 310-49.000.
Engelman, Fred H.: *See—*
Emerson, Paul D.; Davis, S Jack; Oatfield, John C.; Engelman, Fred H.; and Bartee, Charles E., 3,719,210.
Emerson, Paul D.; Davis, S. Jack; Oatfield, John C.; Engelman, Fred H.; and Bartee, Charles E., 3,719,212.
Engelsmann, Dieter; and Schroder, Rolf, to Agfa-Gevaert Aktiengesellschaft. Photographic apparatus for use with percussive multilamp photoflash units. 3,719,126, Cl. 95-110.500.
English, Barry E.: *See—*
Herod, Donald M.; and English, Barry E., 3,719,162.
Engstrom, John Bertil, to Praestmark, T. Fastening device for detachably securing two members together. 3,718,950, Cl. 24-217.000.
Environment/One Corporation: *See—*
Kawahata, Masayuki, 3,719,573.
Envirotech Corporation: *See—*
Gelfand, Peter C., 3,719,031.
Epolosives Corporation of America: *See—*
Tlam, Elvin W., 3,719,144.
Eraser Company, Inc., The: *See—*
BeVard, Ralph E., 3,719,007.
Erbara Infilco Kabushiki Kaisha: *See—*
Hayashi, Yoshiro; and Obara, Ayatoshi, 3,719,592.
Erdman, John G., to Phillips Petroleum Company. Detection of reducing conditions in a formation as in oil prospecting. 3,719,453, Cl. 23-230.0ep.
Erndt, Edmund E., to Precision Metalsmiths, Inc. Investing apparatus. 3,719,214, Cl. 141-51.000.
Ernest, Ivan: *See—*
Heusler, Karl; Robert Burns; and Ernest, Ivan, 3,719,672.
Esanu, Andre: *See—*
Beaufour, Albert H.; and Esanu, Andre, 3,719,665.
Eskeli, Michael. Rotary ejector compressor. 3,719,434, Cl. 417-78.000.
Esso Research and Engineering Company: *See—*
Bosniack, David S.; and Shaub, Harold, 3,719,600.
Karchmer, Jean H.; and Pennington, Robert E., 3,719,587.
Li, Norman H.; and Cahn, Robert P., 3,719,590.
Thompson, Charles E., 3,719,739.
Vernon, Lonnie W.; and Pennington, Robert E., 3,719,588.
Esterly, Henry N. Key switch. 3,719,902, Cl. 331-117.00r.
Ethyl Corporation: *See—*
Jarema, Chester P.; and Niebylski, Leonard M., 3,719,223.
Eto, Yoshizumi; and Hibi, Masao, to Hitachi, Ltd. Striped filters for color video signal generators. 3,719,771, Cl. 178-5.4st.
European Atomic Energy Community: *See—*
Van derschueren, Emile, 3,719,470.
Evans, Dorothy D.: *See—*
Evans, Frank E.; and Evans, Dorothy D., 3,719,359.
Evans, Frank E.; and Evans, Dorothy D. Sand wedge golf club. 3,719,359, Cl. 273-167.00j.
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Extel Corporation: *See—*
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Falkenberg, Dieter; and Winkler, Josef, to Siemens Aktiengesellschaft. Thermogenerator with thermoelectric elements in exhaust ducts. 3,719,532, Cl. 136-208.000.
Farbenfabriken Bayer Aktiengesellschaft: *See—*
Blahak, Johannes; and Meckel, Walter, 3,719,717.
Buchel, Karl Heinz; Grewe, Ferdinand; Scheinpflug, Hans; Kaspers, Helmut; and Regel, Erik, 3,719,760.
Grude, Fritz; Halcour, Kurt; Schwerdtel, Wulf; Swodenk, Wolfgang; and Woernle, Peter, 3,719,718.
Thomas, Wilhelm; Oertel, Harald; Rinke, Heinrich; and Bahr, Ulrich, 3,719,708.
Farley, Charles Edward; and Grayson, Martin, to American Cyanamid Company. Bleaching of lignocellulosic materials with oxygen in the presence of a peroxide. 3,719,552, Cl. 162-65.000.
Farmhand, Inc.: *See—*
Koehnen, Earl A., 3,719,268.
Farrand Optical Co., Inc.: *See—*
Kallet, Eli A., 3,719,410.
Farrissey, William J., Jr.: *See—*
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Fay, Robert L.; and Simonetti, Guido F., to Litton Systems, Inc. Memory analyzers. 3,719,929, Cl. 340-172.500.
Feiler, William A.; and Shen, Chung Yu, to Monsanto Company. Solid nitrilotriacetate-iron and zinc metal complexes. 3,719,694, Cl. 260-429.900.

Felciai, Laurent. Tower-construction with overhangs to support lightweight dwellings. 3,719,012, Cl. 52-73.000.

Ferag, Fehr & Reist AG: *See—*
Reist, Walter; and Meili, Heinz, 3,719,267.

Ferguson, Donald C.; Lynch, Frederick W.; and Simons, Gerald F., to Sperry Rand Corporation. Digital automatic control system with pseudo position feedback and monitor. 3,719,878, Cl. 318-565.000.

Ferro, Anthony, to Uniroyal, Inc. Photoconductive elements including barrier layer of conductive oligomers. 3,719,485, Cl. 96-1.500.

Ferro, Michael. Removable camper unit. 3,719,383, Cl. 296-23.0mc.

Fiat Societa per Azioni: *See—*
Peruglia, Marco, 3,719,401.

Fichtel, Dieter, to American Store Equipment Corporation. Wall easel. 3,719,766, Cl. 35-63.000.

Fidi, Werner, to AKG Akustische u. Kino-Gerate. Device for creating artificial reverberation. 3,719,908, Cl. 333-30.000.

Finch, Neville: *See—*
Robison, Michael Mullen; and Finch, Neville, 3,719,683.

Finger, John F. Welding helmet. 3,719,793, Cl. 219-147.000.

Finger, Otto R., to Display Corporation International. Placard holding display assembly. 3,719,000, Cl. 40-125.00h.

Fink, Lester H. Computer controlled coordination of regulation and economic dispatch in power systems. 3,719,809, Cl. 235-151.210.

Firestone Tire & Rubber Company, The: *See—*
Wright, Sam W., 3,719,614.

Fischer & Porter Co.: *See—*
Burgess, Thomas H., 3,719,080.

Fischer, Christopher L.; and Otte, Richard F., to Raychem Corporation. Clamping device for printed circuits. 3,719,917, Cl. 339-17.0cf.

Fisher, Frank E.; and Fisher, Joseph N. Cough filter. 3,719,188, Cl. 128-275.000.

Fisher, George Myles Cordell: *See—*
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Fisher, Joseph N.: *See—*
Fisher, Frank E.; and Fisher, Joseph N., 3,719,188.

Fitzpatrick, James, to Dyer & Miller Bros. Ltd. Angle valve. 3,719,202, Cl. 137-360.000.

Flanagan, C. Erman, to Du Pont de Nemours, E. I., and Company. Method of fabricating ring shapes by hat pressing. 3,719,479, Cl. 75-226.000.

Fleig, Adolf: *See—*
Manfroy, Willy; and Fleig, Adolf, 3,719,748.

Fleissner, Heinz, to Vepa AG. Apparatus for the continuous treatment of especially thick, voluminous textile materials with large widths. 3,719,062, Cl. 68-5.00e.

Flick, Howard S., to Jackson, Byron, Inc. Tubing tong hydraulic drive system. 3,719,237, Cl. 173-12.000.

Florjancic, Dusan, to Sulzer Brothers Limited. Circulating system for a nuclear reactor. 3,719,557, Cl. 176-56.000.

FMC Corporation: *See—*
Ouska, Ralph C., 3,719,292.

Focke, Heinz; and Bretthauer, Jurgen. Method and apparatus for packing articles with longitudinal and cross-members. 3,719,018, Cl. 53-26.000.

Foley, Richard G.: *See—*
Murray, James E.; and Foley, Richard G., 3,719,877.

Fontaine, Bernard E.: *See—*
Musick, Victor S.; and Fontaine, Bernard E., 3,719,432.

Fontein, Freerk J.; Ploeg, Martinus; and Van Linden, Jacques, to Stamicarbon N.V. Device for pulsating a liquid in a column. 3,719,204, Cl. 137-568.000.

Ford Motor Company: *See—*
Banks, Eric John, 3,719,101.
Boschen, John A.; and Stanecki, Patrick J., 3,719,387.
Burcz, Lawrence D.; and Lemieux, George E., 3,719,259.
Dzieciuch, Matthew A.; and Weber, Neill, 3,719,531.
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Jagdmann, Edwin F.; and Lemieux, George E., 3,719,107.
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Johnson, Olin B.; and Labana, Santokh S., 3,719,523.
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Nordstrom, John D., 3,719,723.
Vallance, James K., 3,719,226.
Vanderberg, Lawrence J.; and Wenzel, John L., 3,719,886.

Foreman, Lester. Illuminated attachment for a lock-equipped door knob. 3,719,821, Cl. 240-2.130.

Forestieri, Raymond W.: *See—*
Sims, S. Donald; and Forestieri, Raymond W., 3,718,968.

Forsheda Gummifabric AB: *See—*
Nordin, Karl Olof, 3,719,375.

Forst, Donald J., to Itek Corporation. Rapid color processing. 3,719,493, Cl. 96-55.000.

Fortnam, George A., to Den-Tal-EZ Mfg. Co. Adjustable head rest assembly for a dental chair. 3,719,388, Cl. 297-405.000.

Fouces, Juan M.: *See—*
Fouces, Manuel; and Fouces, Juan M., 3,719,063.

Fouces, Manuel; and Fouces, Juan M. Device for prevention of automobile theft. 3,719,063, Cl. 70-202.000.

Fowler, Donald W.; and Heiney, Harold G., Jr., to United Aircraft Corporation. Fault detector for helicopter feel augmentation system. 3,719,336, Cl. 244-77.00m.

Fox, Shirl S.; and Hershkowitz, David M., said Fox assor. to Dental Designs. Dental console. 3,718,972, Cl. 32-22.000.

Francis, Marion D., to Proctor & Gamble Company, The. Compositions for inhibiting anomalous depositio and mobilization of calcium phosphate in animal tissue. 3,719,756, Cl. 424-204.000.

Franco, Borciani; and Musarra, Gaetano, to Societa Italiana Telecommunicazioni Siemens S.p.A. Transceiver for peripheral station of multiplex telecommunication system. 3,719,890, Cl. 325-55.000.

Franklin Mint Corporation: *See—*
Okell, Roy E.; Kirkham, Harold; and Kirkham, Kathleen E., 3,719,121.

Frantz, Richard J.; and Morris, Alton R., to Arrow-Hart, Inc. Voltage sensing and switching circuit. 3,719,859, Cl. 317-31.000.

Frappe, Pierre, to Verdol S.A. Electronic reading in of designs for the preparation of perforated jacquard cards. 3,719,803, Cl. 235-61.11e.

Frederiksen, Erling Knud; and Godtfredsen, Wagn Ole, to Lovens Kemiske Fabrik Produktion-sakticselskab. Semi-synthetic penicillin esters. 3,719,668, Cl. 260-239.100.

Free, Maurice George, to Mororola, Inc. Technique for compensating for input bias currents of transistors. 3,719,833, Cl. 307-296.000.

Freeman, Harlan G., to Weyerhaeuser Company. Rapid curing resin compositions comprising a modified aldehyde condensation polymer coreacted with an epoxide-aldehyde mixture. 3,719,724, Cl. 260-828.000.

Friberg, Jean-Marie Eugene; and Merigoux, Jean-Marie, to Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique "Alcatel". Supersonic compressors with conical flow. 3,719,426, Cl. 415-116.000.

Frick Company: *See—*
Shapley, Gail C.; Wakatsuki, J.; and Scheffer, William J., 3,719,055.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Grada, Walter; Purnhagen, Heinz; Schnell, Gunter; and Stedtnitz, Wolfgang, 3,719,920.
Schumacher, Friedrich, 3,719,153.

Friedmann, Harry; and Tarpinian, Haig D., to Uniroyal, Inc. Apparatus for measuring uniformity of tires. 3,719,813, Cl. 235-151.310.

Frielink, Johannes M., to Stamicarbon N.V. Process for the preparation of powdery homo- or copolymers of ethylene. 3,719,648, Cl. 260-85.50r.

Friend, Clifford K.: *See—*
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Frigidmeats, Inc.: *See—*
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Fritz, James S.; Gillette, Robert K.; and Beuerman, Donald R., to United States of America, Atomic Energy Commission. Separation of sulfonic acids from sulfuric acid. 3,719,703, Cl. 260-505.00p.

Froning, H. R.; and Askew, Warren S., to Pan American Petroleum Corporation. Micro-emulsion of increased viscosity for improved oil recovery. 3,719,606, Cl. 252-306.000.

Frye, Kenneth G., to Beloit Corporation. Web spreader element. 3,719,316, Cl. 226-199.000.

Fuchs, Francis Joseph, Jr., to Western Electric Company, Incorporated. Variable orifice die and control therefor. 3,719,065, Cl. 72-9.000.

Fuji Photo Film Co., Ltd.: *See—*
Takeda, Hideo, 3,719,207.

Fujii, Hiroshi: *See—*
Suzukawa, Yuichi; Kono, Hisashi; Terai, Kenji; Kuribayashi, Atushi; Tamura, Yutaka; Fujii, Hiroshi; and Saito, Muneki, 3,719,029.

Fujii, Makoto, to Ash Kasei Kogyo Kabushiki Kaisha. Method for producing composite fibers of acrylonitrile type. 3,719,738, Cl. 264-171.000.

Fujimoto, Sakae, to Kabushiki Kaisha Ricoh. Card punch. 3,719,953, Cl. 346-83.000.

Fujimoto, Yasuo; Nagaoka, Koichi; Tatsukawa, Keizo; and Koiwa, Yoichi, to Kyowa Hakko Kogyo Co., Ltd. Synthetic leather. 3,719,520, Cl. 117-76.00t.

Fujioka, Shuji: *See—*
Takahashi, Masao; Mibae, Jiro; Ino, Takamitsu; Takigawa, Ryuhei; and Fujioka, Shuji, 3,719,541.

Fujiyasu, Tatsuo; and Ohnuma, Yoshio, to Hitachi, Ltd. Apparatus for photographing an image of a specimen. 3,719,776, Cl. 178-6.70r.

Fukuda, Takeo: *See—*
Takaoka, Takashi; Takahashi,Sadao; Fukuda, Takeo; and Hori, Teruhisa, 3,719,775.

Fukui, Nobuhiko: *See—*
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Fuller, Ray W.: *See—*
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Fullington, William H.; and Maisak, Melvin O., to Pet Incorporated. Mobile merchandiser cart and refrigerated showcase therefor. 3,719,408, Cl. 312-236.000.

Fulton, John R.; and Zenner, Walter J., to Extel Corporation. Control system for high speed printer. 3,719,781, Cl. 178-30.000.

Furuya, Chikashi: *See—*
Asao, Hiroshi; Hihara, Takeshi; Endo, Seiji; Furuya, Chikashi; and Sano, Kouhei, 3,719,050.

GAF Corporation: *See—*
Mizianty, Michael F., 3,719,491.

Gaicki, Stanley, to Motorola, Inc. Flexible contact members for use in high power electrical devices including a plurality of semiconductor units. 3,719,862, Cl. 317-234.00r.
Galantay, Eugene E.; and Habeck, Dietmar A., to Sandoz-Wander, Inc. Substituted carbinol derivatives. 3,719,670, Cl. 260-239.55v.
Galbraith, Lyle D., to Rocket Research Corporation. Liquefied gas vaporizer attachment for a pressure bottle. 3,719,054, Cl. 62-50.000.
Gallay, Jean-Jacques: *See—*
Traber, Walter; Margot, Alfred; and Gallay, Jean-Jacques, 3,719,702.
Galle, Edward Louis; Mikkelson, Marvin Olaf; and Kolosky, Joseph Francis, to Pillsbury Company, The. Process for producing a simulated nutmeat. 3,719,497, Cl. 99-14.000.
Galli, Remo: *See—*
Minisci, Francesco; Bertini, Franco; Galli, Remo; Pizzo, Torricella Del; and Quilico, Adolfo, 3,719,685.
Gallina, Harold. Drive mechanism. 3,719,129, Cl. 95-53.00r.
Gardner, Conrad O. Flight control apparatus for maintaining maximum ground speed while within the jet stream. 3,719,337, Cl. 244-77.00d.
Gasc, Jean-Claude: *See—*
Bucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, 3,719,691.
Gawlick, Heinz; and Bendler, Hellmut, to Dynamit Nobel AG. Primer for electric and percussion fuses for cartridge ammunition. 3,719,148, Cl. 102-46.000.
Gazard, Maryse; and Barbet, Lucien, to Thomson-CSF. Recording and display laser scanning system using photochromic substrates. 3,719,780, Cl. 178-7.600.
Gebhart, Charles J.: *See—*
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Gebruder Bohler & Co. Aktiengesellschaft: *See—*
Plockinger, Erwin; Ornig, Hermann; and Schmidt, Alfred, 3,719,790.
Geigy Chemical Corporation: *See—*
Traber, Walter; Margot, Alfred; and Gallay, Jean-Jacques, 3,719,702.
Geil, Fred G.; and Dunsworth, William K., to Westinghouse Electric Corporation. Differential pressure transducer. 3,719,939, Cl. 340-261.000.
Gelfand, Peter C., to Envirotech Corporation. Electric field directed control of dust in electrostatic precipitators. 3,719,031, Cl. 55-136.000.
General Electric Company: *See—*
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Blair, Lawrence William; and Bryans, Alexander Connor, 3,719,430.
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General Signal Corporation: *See—*
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Gerber Garment Technology, Inc.: *See—*
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Gerber, Heinz Joseph; and Pearl, David Raymond, to Gerber Garment Technology, Inc. Penetrable bed used for cutting sheet material and method for treating same. 3,719,113, Cl. 83-56.000.
Gereth, Reinhard, to Licentia Patent-Verwaltungs-G.m.b.H. Coating apparatus. 3,719,166, Cl. 118-48.000.
Gibson, Geoffrey M.: *See—*
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Gifford, Robert T., to Vernay Laboratories, Inc. Thermally responsive valve assembly. 3,719,322, Cl. 236-102.000.
Gilbreath, Benjamin F., to Hunt Electronics Company. Overload protection system for a light dimmer unit. 3,719,858, Cl. 317-16.000.
Gilchrist, Reginald Selby. Textile apparatus. 3,719,035, Cl. 57-77.300.
Gillette, Robert K.: *See—*
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Gintic, Michael Norman: *See—*
Gintick, Richard Conway; and Gintic, Michael Norman, 3,719,370.
Gintick, Richard Conway; and Gintic, Michael Norman. Anti-theft shopping cart. 3,719,370, Cl. 280-33.99c.
Girault, Pierre; and Hagemann, Guy, to Roussel-UCLAF. Drugs derived from pyrazolone. 3,719,764, Cl. 424-273.000.
Girling Limited: *See—*
Margetts, Hugh Grenville, 3,719,258.
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Glomski, Ronald L.: *See—*
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Godtfredsen, Wagn Ole: *See—*
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Goffe, William L., to Xerox Corporation. Imaging system. 3,719,482, Cl. 96-1.00r.
Goggins, William B.: *See—*
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Goggins, William B., Jr.: *See—*
Sletten, Carlyle J.; Goggins, William B., Jr.; and Blacksmith, Philipp, 3,719,945.
Golaski, Frank W., to Westinghouse Electric Corporation. Electrical inductive apparatus. 3,719,910, Cl. 336-146.000.
Goldman, Martin; and Johnson, Arthur L., to Eastman Kodak Company. Photoconductive elements containing organo-metallic photoconductors. 3,719,486, Cl. 96-1.600.
Gooding, William T., Jr.: *See—*
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Goodson, William Eugene, to Bell Telephone Laboratories, Incorporated. Double sideband modem with either suppressed or transmitted carrier. 3,719,903, Cl. 332-44.000.
Goody, Charles P., to General Electric Company. Coaxial electric arc discharge devices. 3,719,852, Cl. 313-178.000.
Goodyear Tire & Rubber Company, The: *See—*
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Gorman-Rupp Company, The: *See—*
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Gosger, Peter, to AEC-Elotherm G.m.b.H. Method and apparatus for countersinking cavities in a workpiece. 3,719,569, Cl. 204-129.550.
Gould, Ira L., to General Motors Corporation. Range ventilating system. 3,719,137, Cl. 98-115.00j.
Grabel, Ulrich: *See—*
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Grace, Robert W., to Webb, Jervis B., Company. Controlled mechanical storage device. 3,719,295, Cl. 214-674.000.
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Diffenbach, Richard A.; and Heavens, Thomas H., 3,719,732.
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Grada, Walter; Purnhagen, Heinz; Schnell, Gunter; and Stedtnitz, Wolfgang, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method and apparatus for displaying and/or recording measured values. 3,719,920, Cl. 340-3.00r.
Graf, Carlton Eugene, to General Electric Company. Current limiting control for an electric power system. 3,719,873, Cl. 318-227.000.
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Grant, Whitney I., to Vilter Manufacturing Corporation. Two-stage refrigeration system having crankcase pressure regulation in high stage compressor. 3,719,057, Cl. 62-193.000.

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Graves, Howard K., to Olin Corporation, mesne. Pulley belt assembly. 3,719,098, Cl. 74-216.500.
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Green, Martin, to Westinghouse Electric Corporation. Multielectrode signal plate storage tube for standards conversion of electrical signals. 3,719,778, Cl. 178-6.800.
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Greenfield, Harold: *See*—
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Clark, William H.; Greenlee, Thomas W.; and Toporcer, Louis H., 3,719,635.
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Grewe, Ferdinand: *See*—
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Grundig-Elektro-Mechanische Versuchsanstalt: *See*—
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Gutowski, Gerald E., to Lilly, Eli, and Company. Epimerization of 6-acylamido and 6-imido penicillin sulfoxide esters. 3,719,667, Cl. 260-239.100.
Gutton, Henri; and Hugon, Jean Jacques, deceased (by Hugon, Simone Jeanne Georgette; Augarde, Marie Jeanne; and Hugon, Emile, heirs). Method of and device for detecting submerged bodies by means of megameter radio waves. 3,719,947, Cl. 343-112.00r.
Gysling, Henry J.: *See*—
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Habraken, Louis; Leroy, Vincent; Meulemans, Marcel; and Carteels, Florent, to Centre National de Recherches Metallurgiques and Centre d'Etude de l'Energie Nucleaire. Low carbon ferrous alloy containing chromium. 3,719,475, Cl. 75-126.00d.
Hadam, Wilhelm; and Ploppa, Jurgen, to Stoll, H., and Company. Safety device for flat knitting machine. 3,719,061, Cl. 66-157.000.
Hagemann, Guy: *See*—
Girault, Pierre; and Hagemann, Guy, 3,719,764.
Haggard, Kenneth S. Attachment for automatic override of manually operated compressed gas fire extinguishers and alarms. 3,719,231, Cl. 169-26.000.
Hai, Atta Mohammed; Kerrigan, Charles M.; and Leidy, Harold T., to General Foods Corporation. Meat analogs. 3,719,499, Cl. 99-17.000.
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Grude, Fritz; Halcour, Kurt; Schwerdtel, Wulf; Swodenk, Wolfgang; and Woernle, Peter, 3,719,718.
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Hall, Harold E., to Stalwart Rubber Company. Apparatus for manufacturing rubber washer elements. 3,719,443, Cl. 425-352.000.
Hall International Inc., mesne: *See*—
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Hall, John N., to Hercules Incorporated. Preparation of transversely fibrillated film. 3,719,540, Cl. 156-267.000.
Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., to Ciba-Geigy Corporation. Certain 2-isonitrosoalkyl-15,16-dihydropyrenes. 3,719,709, Cl. 260-556.00a.
Hall Ski-Lift Company, Inc.: *See*—
Savage, Phillip D., 3,719,369.
Hama, Kinjiro; Mishima, Nobuo; and Miyamoto, Kazuo, to Sumitomo Chemical Co., Ltd. Monoazo dyestuffs containing a carboxamido-4(3H)-quinazolone group. 3,719,657, Cl. 260-154.000.
Hamburg, Douglas R., to United States of America, Air Force. Logarithmic IF amplifier. 3,719,831, Cl. 307-230.000.
Hamill, Robert L.; Higgens, Calvin E.; and Hoehn, Marvin M., to Lilly, Eli, and Company. Process for producing 7-(5-amino-5-carboxyvaleramido-7-methoxycephalosporanic acid. 3,719,563, Cl. 195-80.00r.
Hamilton, William. Storage containers for liquids. 3,719,302, Cl. 220-9.0lg.
Hammel, Larry F., to Diagraph-Bradley Industries, Inc. Stencil hand stamp with fluid-containing handle and torsion-spring supports. 3,719,140, Cl. 101-125.900.
Hampl, Edward F., Jr., to Minnesota Mining and Manufacturing Company. Thermoelectric composition. 3,719,533, Cl. 136-238.
Hanes, Clifford D. Orthopedic bolster pillow. 3,719,185, Cl. 128-69.000.
Hanes, James W. E., to Vetco-Offshore Industries, Inc. Double sealed tubular connector apparatus. 3,719,070, Cl. 73-37.000.
Haney, Martha L. Wheel chair. 3,719,390, Cl. 297-6.000.
Hanft, Herbert, to Westinghouse Electric Corporation. Inter-resonator coupling. 3,719,909, Cl. 333-73.00c.
Hansford, Rowland C., to Union Oil Company of California. Dehydrogenative process and catalyst. 3,719,721, Cl. 260-673.50r.
Hansley, Virgil L.; Greenberg, Harry; Morgan, Fred Keith; and Grinninger, Lowell D., to National Distillers and Chemical Corporation. Modification of alfin polymers and product. 3,719,730, Cl. 260-877.000.
Hanson, Raymond W. Venetian blind window assembly. 3,719,221, Cl. 160-168.000.
Hara, Kazuo; and Yoshitake, Toshihiko, to Kuraray Co., Ltd. Urethane elastomer combined with copolymer of unsaturated carboxylic acid ester and ionically crosslinked unsaturated carboxylic acid. 3,719,726, Cl. 260-859.000.
Haracz, Edward F. Lithographic plate developing apparatus. 3,719,133, Cl. 95-89.00r.
Harding, Dale L.; and Kuhnash, Arthur R., to Textron, Inc. Framed screen panel. 3,719,222, Cl. 160-371.000.
Hardwig, Ernest B. System for sorting mail bags. 3,719,269, Cl. 198-179.000.
Hardy, Frederick Edward; Robson, Peter; and Speakman, Peter Roscoe Hartley, to Procter & Gamble Company, The. Polymers and detergent compositions containing them. 3,719,647, Cl. 260-86.10r.
Harlam, Gerald F.; and Okolowicz, Marian A., to Pilling Chain Co. Inc. Slider construction for separable fasteners. 3,718,949, Cl. 24-205.15r.
Harnden, John D., Jr., to General Electric Company. Induction cooking appliance including temperature sensing of inductively heated cooking vessel by "modulated" light. 3,719,789, Cl. 219-10.490.
Harner, Robert H.; Meister, Otto; and Owen, Robert E., to S.C. Electric Company. Exhaust control device for circuit interrupting devices. 3,719,912, Cl. 337-280.000.
Harper, Ann K.: *See*—
Harper, John L., 3,718,961.
Harper, Ernest A.: *See*—
De Marco, Salvador S.; and Harper, Ernest A., 3,719,053.
Harper, John L.; deceased (by Harper, Ann K.; executrix). Electrical connection between dissimilar metals. 3,718,961, Cl. 29-191.000.
Harper, Robert V.: *See*—
Michels, Lawrence S.; Minka, George F.; Kovar, Donald G.; and Harper, Robert V., 3,719,927.
Harrington, Horrall, 50% to Himmel, Ivan. Inflatable form for concrete building shell. 3,719,341, Cl. 249-65.000.

Harris, Arthur M. Electroacoustic means for separation of glued joints. 3,719,543, Cl. 156-584.000.

Harris, Harold Ronald. Quick disconnect pressurization apparatus. 3,719,205, Cl. 137-583.000.

Harris-Intertype Corporation: *See*—
Mebus, Henry R., 3,718,939.
Murray, James E.; and Foley, Richard G., 3,719,877.

Harrison, John Gardon. Golf club swing training device. 3,719,363, Cl. 273-186.00a.

Harrison, Robert S.; and Johnson, Thomas R., to Ford Motor Company. Inertia responsive carburetor fuel flow control means. 3,719,352, Cl. 261-23.00a.

Harsch, Gerald J., to Harsch Precision Engineering. Downrigger. 3,719,331, Cl. 242-106.000.

Harsch Precision Engineering: *See*—
Harsch, Gerald J., 3,719,331.

Harter, Lynn J., to Thrall Car Manufacturing Company. Railroad car with fluid side bearing antisway means. 3,719,152, Cl. 105-164.000.

Hartley, Dennis, to Coal Industry (Patents) Limited. Apparatus for steering a longwall mineral mining machine. 3,719,394, Cl. 299-1.000.

Hartog, Thomas J., to Browning Industries, Inc. Scar lever for eliminating doubling. 3,718,998, Cl. 42-42.00r.

Hashimoto, Seiya; Takahashi, Soji; Hattori, Yasuhiro; and Imai, Kuninori, to Hitachi, Ltd. Method of manufacturing an article having a cylindrical peripheral wall and integral thin-walled portions inwardly thereof. 3,719,068, Cl. 72-254.000.

Hatcher, Odle Glenn, to United States of America, Air Force. Refillable cooling package. 3,719,206, Cl. 137-596.000.

Hathaway, Robert E., to Autometrics Co. Method and apparatus for measurement of particle size and percent solids in multiple process flowstreams. 3,719,090, Cl. 73-432.0ps.

Hattori, Kenichi; Ueda, Yuichi; and Tanino, Yukio, to Kao Soap Co., Ltd. Ethylene oxide polymer composition. 3,719,631, Cl. 260-45.8sn.

Hattori, Yasuhiro: *See*—
Hashimoto, Seiya; Takahashi, Soji; Hattori, Yasuhiro; and Imai, Kuninori, 3,719,068.

Haupt, David C.; and Smith, Walter F., to United States of America, Navy. Apparatus for testing infrared sensitive fuzes. 3,719,077, Cl. 73-167.000.

Hauschild, Ulrich; Holst, Rudolf; Kaspers, Hans-Heinz; and Dahme, Wolfgang, to Kali-Chemie Aktiengesellschaft. Preparation of alkali containing calcined phosphate fertilizers. 3,719,464, Cl. 71-45.000.

Hauser, Kenneth L.: *See*—
Molloy, Bryan B.; Fuller, Ray W.; and Hauser, Kenneth L., 3,719,713.

Havinga, Reginoldus; and Swaters, Pieter D., to Koninklijke Industrieele Maatschappij Noury & Van Der Lande N.V. Novel amino-substituted benzoates. 3,719,692, Cl. 260-404.500.

Hawkins, Clay E.: *See*—
Greenspan, Joseph; and Hawkins, Clay E., 3,719,504.

Hawkins, George C.; and Cutts, James H. Method and apparatus for removing screen wire members from multi-level screen deck assemblies. 3,718,963, Cl. 29-200.00d.

Hawthorn, John: *See*—
Gladstone, James E.; Wilcox, James E.; and Hawthorn, John, 3,719,517.

Hayashi, Yoshiro; and Obara, Ayatoshi, to Erbara Infilco Kabushiki Kaisha. Filtration process for clarification. 3,719,592, Cl. 210-53.000.

Hayes, Lester P.; Drury, Raymond L., Jr.; and Grosse, Edward H., to Staley, A. E., Manufacturing Company. Wrap sizing agent. 3,719,664, Cl. 260-233.500.

Hayford, John S., to Stauffer Chemical Company. Hydrothermal process for making hydrogen fluoride. 3,719,747, Cl. 423-485.000.

Heavens, Thomas H.: *See*—
Diffenbach, Richard A.; and Heavens, Thomas H., 3,719,732.

Hedrick, John R., to Hall International Inc., mesne. Diffuser apparatus for pneumatic tools. 3,719,251, Cl. 181-36.00a.

Hehr, Herbert. Stone gatherer. 3,719,233, Cl. 171-65.000.

Heidorn, John H., to General Motors Corporation. Electromagnetic clutch. 3,719,260, Cl. 192-84.00c.

Heiney, Harold G., Jr.: *See*—
Fowler, Donald W.; and Heiney, Harold G., Jr., 3,719,336.

Heinze, Gerhard; and Sarnes, Reiner, to Bayer Aktiengesellschaft and Mahler, J. F., Apparate- und Ofenbau Kommandite-Gesellschaft. Resolving gas mixtures. 3,719,025, Cl. 55-31.000.

Heinzer, Paul; and Schweizer, Alfred, to Battelle Memorial Institute. Printing method and apparatus using conductive fusible ink. 3,719,261, Cl. 197-1.00r.

Hemmi, Christian O., to Texas Instruments, Incorporated. Antenna pattern roll stabilization. 3,719,949, Cl. 343-117.000.

Hendrickson, Kenneth L.: *See*—
Johnston, Robert F.; and Hendrickson, Kenneth L., 3,719,418.

Hennings, Klaus: *See*—
Schutze, Hans Jurgen; and Hennings, Klaus, 3,719,487.

Henrick, Clive A.; Siddall, John B.; and Anderson, Richard J., to Zoecon Corporation. Imino substituted α,β-unsaturated aliphatic esters. 3,719,666, Cl. 260-239.00e.

Henry, David W.: *See*—
Sarett, Lewis H.; Hoff, Dale R.; and Henry, David W., 3,719,759.

Hensen, Friedhelm: *See*—
Schippers, Heinz; Hensen, Friedhelm; and Lenk, Erich, 3,719,442.

Herbstman, Sheldon; Peck, Reese A.; Guptill, Frank E., Jr.; and Wilson, Raymond F., to Texaco Inc. Asphalt separation in desulfurization with an oxidation step. 3,719,589, Cl. 208-208.00r.

Hercules Incorporated: *See*—
Conley, Joseph W., 3,719,658.
Hall, John N., 3,719,540.
Klug, Eugene D., 3,719,663.
Podlas, Thomas J., 3,719,503.

Herman, Elvin E.; and O'Sullivan, Michael R., to Hughes Aircraft Company. Adaptive automatic gain control for radar systems. 3,719,942, Cl. 343-7.00a.

Herod, Donald M.; and English, Barry E., to General Motors Corporation. Shift indicator mechanism. 3,719,162, Cl. 116-124.000.

Herrmann, Gunther, to Photocircuits Division of Kollmorgen Corporation. Method and means for measuring the deposition rate in metallic plating baths. 3,719,565, Cl. 204-1.00t.

Hershkowitz, David M.: *See*—
Fox, Shirl S.; and Hershkowitz, David M., 3,718,972.

Heseltine, Donald W.: *See*—
Kurtz, Donald W.; and Heseltine, Donald W., 3,719,494.

Hessland, Gerd; and Grabel, Ulrich, to Grundig-Elektro-Mechanische Versuchsanstalt. Sound recording and reproducing apparatus. 3,719,364, Cl. 274-4.00d.

Heusler, Karl; Robert Burns; and Ernest, Ivan, to Ciba-Geigy Corporation. 4-Substituted methylene-7-amino-8-oxo-5-thia-1-aza-ricyclo [4,2,0] oct-2-ene-2-carboxylic acids. 3,719,672, Cl. 260-343.00c.

Hewitt, Terry L., to General Electric Company. Free-standing audio-visual-response teaching system. 3,718,984, Cl. 35-9.00a.

Hewitt, Terry L., to General Electric Company. Group instruction audio-visual teaching system. 3,718,985, Cl. 35-9.00a.

Hewitt, Terry L., to General Electric Company. Scanned audio-visual-response teaching system. 3,718,986, Cl. 35-9.00a.

Hewlett-Packard Company: *See*—
Steward, Robert L., 3,719,849.

Hiatt, Norman A., to Uniroyal, Inc. Polyarylene tetrasulfide polymers. 3,719,645, Cl. 260-79.000.

Hibi, Masao: *See*—
Eto, Yoshizumi; and Hibi, Masao, 3,719,771.

Hibino, Sohei: *See*—
Shimizu, Tetsuji; Hibino, Sohei; Miwa, Haruo; and Inagaki, Nobukatsu, 3,719,887.

Hickman, John B., to Hickman, W. P., Company, Inc. Coping and support therefor. 3,719,010, Cl. 52-60.000.

Hickman, W. P., Company, Inc.: *See*—
Hickman, John B., 3,719,010.

Hiersign Heinz: *See*—
Efssel, Dietrich; Hiersign Heinz; Kinzler, Fritz; Russmann, Werner; and Schulz, Helmut, 3,719,060.

Higgens, Calvin E.: *See*—
Hamill, Robert L.; Higgens, Calvin E.; and Hoehn, Marvin M., 3,719,563.

Hihara, Takeshi: *See*—
Asao, Hiroshi; Hihara, Takeshi; Endo, Seiji; Furuya, Chikashi; and Sano, Kouhei, 3,719,050.

Himmel, Ivan: *See*—
Harrington, Horrall, 3,719,341.

Hindman, Clyde V. Adjustable spray head. 3,719,328, Cl. 239-546.000.

Hirano, Mikio: *See*—
Ono, Kazumasa; Tanii, Takuya; Kamoshita, Gen-Ichi; Hirano, Mikio; and Motouchi, Masafumi, 3,719,567.

Hiroshima, Minoru, to Hitachi, Ltd. One-bit data transmission system. 3,719,930, Cl. 340-172.500.

Hirsch, Stephen S.: *See*—
Lee, Lester T. C.; and Hirsch, Stephen S., 3,719,640.

Hitachi, Ltd.: *See*—
Eto, Yoshizumi; and Hibi, Masao, 3,719,771.
Fujiyasu, Tatsuo; and Ohnuma, Yoshio, 3,719,776.
Hashimoto, Seiya; Takahashi, Soji; Hattori, Yasuhiro; and Imai, Kuninori, 3,719,068.
Hiroshima, Minoru, 3,719,930.
Izumi, Hideki; Ichikawa, Ryoichi; Koike, Hiroshi; and Tanaka, Katsuyuki, 3,719,405.
Matsuda, Yasumasa, 3,719,195.
Ogawa, Takuzo; and Iimura, Masao, 3,719,863.
Oishi, Hiroshi; Aoki, Fumio; Kawano, Shigeru; Kudo, Yasushi; Kobayashi, Hideo; and Hyodo, Takeo, 3,719,928.
Ono, Kazumasa; Tanii, Takuya; Kamoshita, Gen-Ichi; Hirano, Mikio; and Motouchi, Masafumi, 3,719,567.
Shibata, Takanori; Kasama, Ryoji; Naito, Shotaro; and Maki, Shin, 3,719,881.
Taniguchi, Kenji; and Imaizumi, Ichiro, 3,719,864.
Tomita, Sadami, 3,719,911.
Yamazaki, Seishi; and Kaneda, Masao, 3,719,892.

Hitachi Metals, Ltd.: *See*—
Sekimoto, Yashuhiro; and Korenaga, Itsuo, 3,718,956.

Hoagland, Frank V. N.: *See*—
Albrecht, Robert J.; Griner, Arthur J.; and Hoagland, Frank V. N., 3,719,019.

Hochuli, Urs E. Ultra stable symmetrical laser structures. 3,719,900, Cl. 331-94.500.

Hock, Walter L.; and Simon, Abraham, to Kraftco Corporation. Method and apparatus for controlling freezers. 3,719,056, Cl. 62-70.000.

Hocker, Lon O., III: *See—*
Javan, Ali; and Hocker, Lon O., III, 3,719,822.

Hoehn, Marvin M.: *See—*
Hamill, Robert L.; Higgens, Calvin E.; and Hoehn, Marvin M., 3,719,563.

Hofbauer, Werner: *See—*
Authier, Bernhard; Deckert, Helmut; Hofbauer, Werner; and Bauer, Rudolf, 3,719,271.

Hoff, Dale R.: *See—*
Sarett, Lewis H.; Hoff, Dale R.; and Henry, David W., 3,719,759.

Hoffman, George E.; and Tench, John D., to Sun Oil Company of Pennsylvania. Dip coating apparatus including fluid doctor means. 3,719,164, Cl. 118-6.000.

Hoffman, Herbert N., to General Electric Company. Turbine-generator and condenser base for shipboard installation. 3,719,045, Cl. 60-95.00a.

Hoffmann-La Roche Inc.: *See—*
Berger, Julius, 3,719,753.

Hofmann, Eberhard; and Staudt, Heinrich, to Bosch, Robert, G.m.b.H. Fuel shutoff device for multicylinder fuel injection pumps. 3,719,208, Cl. 137-625.410.

Hofmann, Heinrich, to Messerschmitt-Bolkow GmbH. Gas generator and tubular solid charge construction therefore. 3,719,040, Cl. 60-39.470.

Hohenberg, Rudolph, to Avco Corporation. Measurement of gas temperature variations in a gas turbine engine. 3,719,071, Cl. 73-341.000.

Holistein, Carl P., Jr.; Kiltz, Gerald H.; and Sordello, Frank J., to International Business Machines Corporation. Phase lock oscillator with phase compensation circuit for use in data processing system. 3,719,896, Cl. 331-14.000.

Holker, Kenneth U.: *See—*
Vessey, Clifford A.; Gibson, Geoffrey M.; and Holker, Kenneth U., 3,719,534.

Holland, Eugene E.; and Jones, Rex O., III., to Sperry Rand Corporation. Brushless D.C. motor using magneto resistor sensing means. 3,719,875, Cl. 318-254.000.

Holland, Kenneth C.; and Sprando, Anthony E., to Tektronix, Inc. Switch having ganged contacts mounted on opposite sides of circuit board. 3,719,788, Cl. 200-153.0lp.

Hollis, Roger M. Golf cart. 3,719,247, Cl. 180-19.00h.

Holmer, Donald A.: *See—*
Martin, Donald H.; Holmer, Donald A.; Durant, Dennis J.; Bryan, Roland J., Jr.; Saunders, James H.; and Black, William B., 3,719,547.

Holst, Rudolf: *See—*
Hauschild, Ulrich; Holst, Rudolf; Kaspers, Hans-Heinz; and Dahme, Wolfgang, 3,719,464.

Holtzman, Tobias G. Cover for maintaining freshness of coffee. 3,719,306, Cl. 220-93.000.

Holzinger, Robert D., to Sherwin-Williams Company, The. Rapid drying alkyd coating modified with amino aromatic carboxylic acid. 3,719,622, Cl. 260-22.00a.

Honeywell Information Systems Italia S.p.A.: *See—*
Niccolai, Adriano, 3,719,139.

Hoogendonk, Johan W., to Stamicarbon N.V. Diphenylolpropane prills. 3,719,715, Cl. 260-619.00a.

Hooker Chemical Corporation: *See—*
Mekjean, Matthew; and Sconce, James S., 3,719,225.

Hori, Teruhisa: *See—*
Takaoka, Takashi; Takahashi,Sadao; Fukuda, Takeo; and Hori, Teruhisa, 3,719,775.

Horn, Willi: *See—*
Leitz, Ludwig; and Horn, Willi, 3,719,425.

Horvath, Laszlo; Gundisch, Gusztav; Antal, Mandor; and Arvai, Mihaly, to Orazagos Gumiipiri Vallalat. Pneumatic tire. 3,719,219, Cl. 152-379.000.

Horwitt, Laurence G.; and Mattis, Donald J., to Nelmor Incorporated, mesne. Remote swivel movement control. 3,719,105, Cl. 74-501.00m.

Hostein, Charles: *See—*
Berthoux, Jean; Hostein, Charles; and Mugnier, Robert, 3,719,578.

Houdaille Industries, Inc.: *See—*
Baturka, Walter, 3,719,367.
Booth, Frederick E., Jr., 3,719,808.

Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz-Wander, Inc. 1,2,3 12a-Titrahydro-7 (2h) plaidomenones. 3,719,280, Cl. 260-590.000.

Houst, Douglas R.; and Iskandar, Kamal, to General Electric Company. Cam actuated switching assembly. 3,719,871, Cl. 318-139.000.

Howard, Ralph L.: *See—*
Billingsley, Raymond L.; Howard, Ralph L.; and Noreen, Donald H., 3,719,287.

Howard, William C. Rotating piston engine. 3,719,438, Cl. 418-36.000.

Howe, Blair E.: *See—*
Van de Walker, Roger D.; and Howe, Blair E., 3,719,396.

Howell, Wallace E. Air momentum anemometer. 3,719,079, Cl. 73-194.00r.

Howland, George R., to Bendix Corporation, The. Fluid analog control apparatus. 3,719,039, Cl. 60-39.28r.

Hozumi, Shiro: *See—*
Wakabayashi, Takashi; Kinugasa, Terukazu; Hozumi, Shiro; and Sugihara, Kanji, 3,719,933.

Huber, Paul W. Tie down rope. 3,718,947, Cl. 24-73.00h.

Huebner, Erwin: *See—*
Staffa, Alois; and Huebner, Erwin, 3,719,855.

Huemmer, Thomas F.; and Miranda, Thomas J. Radiation curable acrylic urethane monomers. 3,719,638, Cl. 260-77.5cr.

Huffman, Theron M.: *See—*
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Hughes Aircraft Company: *See—*
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Hugon, Emile, heirs: *See—*
Gutton, Henri; and Hugon, Jean Jacques, deceased, 3,719,947.

Hugon, Jean Jacques, deceased: *See—*
Gutton, Henri; and Hugon, Jean Jacques, deceased, 3,719,947.

Hugon, Simone Jeanne Georgette: *See—*
Gutton, Henri; and Hugon, Jean Jacques, deceased, 3,719,947.

Hunt Electronics Company: *See—*
Gilbreath, Benjamin F., 3,719,858.

Hunten, Werner, to Ankerwerk Nurnberg GmbH. Closure nozzle for injection molding machines. 3,719,310, Cl. 222-497.000.

Huther, Edmund: *See—*
Jennes, Gert; Huther, Edmund; and Wolff, Willi, 3,719,649.

Hydromation Systems, Inc.: *See—*
Mentink, John P., 3,719,199.

Hyodo, Takeo: *See—*
Oishi, Hiroshi; Aoki, Fumio; Kawano, Shigeru; Kudo, Yasushi; Kobayashi, Hideo; and Hyodo, Takeo, 3,719,928.

Ichikawa, Ryoichi: *See—*
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Iida, Takeo: *See—*
Yamamoto, Masahiro; and Iida, Takeo, 3,719,274.

Iimura, Masao: *See—*
Ogawa, Takuzo; and Iimura, Masao, 3,719,863.

Illing, David Anthony, to International Computers Limited. Permanent information store. 3,719,804, Cl. 235-61.12n.

Imai, Kin-Ichi; Yoshioka, Yoshio; Toda, Jun; and Aoki, Hisashi, to Takeda Chemical Industries, Ltd. 2,-Furfurylthioinosine 5-phosphate compounds. 3,719,660, Cl. 260-211.50r.

Imai, Kuninori: *See—*
Hashimoto, Seiya; Takahashi, Soji; Hattori, Yasuhiro; and Imai, Kuninori, 3,719,068.

Imaizumi, Ichiro: *See—*
Taniguchi, Kenji; and Imaizumi, Ichiro, 3,719,864.

Imbert, Francis, to Thomson-CSF. Thermionic converter with plural solid reservoirs. 3,719,837, Cl. 310-4.000.

Imperial Chemical Industries Limited: *See—*
Coats, Robert Reid; Greenway, John Michael; and Glen, William, 3,718,953.
Leslie, Victor Jeffrey; and Rose, John Brewster, 3,719,714.

Inagaki, Nobukatsu: *See—*
Shimizu, Tetsuji; Hibino, Sohei; Miwa, Haruo; and Inagaki, Nobukatsu, 3,719,887.

Industrial Science & Technology, Agency of: *See—*
Mita, Akio; and Ishida, Toshio, 3,719,705.

Ingram, Woodrow Hayes, II, to Monsanto Company. Anti-migratory additive for emulsified phenolic resin systems said additive being a water soluble polyacrylate. 3,719,616, Cl. 260-7.000.

Ino, Takamitsu: *See—*
Takahashi, Masao; Mibae, Jiro; Ino, Takamitsu; Takigawa, Ryuhei; and Fujioka, Shuji, 3,719,541.

Institut Francais du Petrole des Carburants et Lubrifiants: *See—*
Barret, Jean Pierre; Monnot, Max; and Trognee, Jacques, 3,719,921.
Dawans, Francois, 3,719,653.

Institut Meditsinskoi Radiologii Amn SSSR: *See—*
Serebryakov, Nikolai Gennadievich; Dedenkov, Anatoly Nikolaevich; and Kiryakov, Mikhail Akimovich, 3,719,750.

Instituto Torcuato di Tella: *See—*
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International Business Machines Corporation: *See—*
Carpenter, Robert Gordon; Lindbloom, Eric; and McMahon, Maurice Thomas, Jr., 3,719,885.
Holistein, Carl P., Jr.; Kiltz, Gerald H.; and Sordello, Frank J., 3,719,896.
Lay, Frank M.; and McDowell, Allen W., 3,719,940.

International Computers Limited: *See—*
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International Lead Zinc Research Organization, Inc.: *See—*
Radtke, Shcrade F.; Miron, Jerry; Bhatt, Pradip; Shah, Bharat C.; and Skeist, Irving, 3,719,551.

International Nickel Company, Inc., The: *See—*
Bieber, Clarence George; and Mihalisin, John Raymond, 3,719,474.

International Standard Electric Corporation: *See—*
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Interpace Corporation: *See—*
Richardson, Albert S., Jr., 3,719,770.

Ishida, Toshio: *See—*
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Iskandar, Kamal: *See—*
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Itek Corporation: *See—*
Forst, Donald J., 3,719,493.

Ito, Akihiko: *See—*
Yoshida, Masaru; Nakase, Yoshiaki; and Ito, Akihiko, 3,719,637.

Ivaschenko, Felix Alexandrovich: *See—*
Bukhman, Aron Borukhovich; Drovenkov, Evgeny Alexandrovich; Ivaschenko, Felix Alexandrovich; Aizenshtein, Aron Meerovich; and Yanushkevich, Igor Lvovich, 3,719,950.

Iwatani, Junichi: *See—*
Ohono, Tadao; Shimizu, Chiaki; and Iwatani, Junichi, 3,719,455.

Iwatsu Electric Co., Ltd.: *See—*
Tano, Takeo, 3,719,805.

Izumi, Hideki; Ichikawa, Ryoichi; Koike, Hiroshi; and Tanaka, Katsuyuki, to Hitachi, Ltd. Gas bearing. 3,719,405, Cl. 308-9.000.

Jackson, Byron, Inc.: *See—*
Carcia, Calixto Fortunato, 3,719,228.
Flick, Howard S., 3,719,237.
Smith, Roger, Jr.; and Turner, John Wirt, Jr., 3,719,236.

Jackson, Richard Lee, to Lilly, Eli, and Company. Process for the crystallization of the ammonium and alkali metal salts in insulin. 3,719,655, Cl. 260-112.700.

Jacob, Heinz-Jurgen: *See—*
Berends, Werner; Jacob, Heinz-Jurgen; and Eggelsmann, Harry, 3,719,846.

Jacobs, F. L., Co.: *See—*
Tischler, Ludwig J., 3,719,313.

Jacocks, Claud L., to Continental Oil Company. Magnesium silicate thickened hydrocarbon insulating fluids. 3,719,601, Cl. 252-62.000.

Jaffa, David; and Miller, James D., to Precision Screen Machines Inc. Method and apparatus for screen printing tiles. 3,719,141, Cl. 101-126.000.

Jagdmann, Edwin F.; and Lemieux, George E., to Ford Motor Company. Two-stage throttle valve for an automatic transmission. 3,719,107, Cl. 74-843.000.

Jamesbury Corporation: *See—*
Sangster, Arlon G.; Pickering, Charles B.; and McNamara, Thomas J., 3,719,926.

Japan Atomic Energy Research Institute: *See—*
Yoshida, Masaru; Nakase, Yoshiaki; and Ito, Akihiko, 3,719,637.

Jarema, Chester P.; and Nicbylski, Leonard M., to Ethyl Corporation. Method for quietly casting foamed metal. 3,719,223, Cl. 164-79.000.

Javan, Ali; and Hocker, Lon O., III, to Massachusetts Institute of Technology. Method of generating a signal with a frequency between 10^{14} and 10^{15} H_2 H_2 with extreme frequency stability. 3,719,822, Cl. 250-83.30h.

Jedynak, Leo; and Gusaras, Vladas, to Oak Electro/Netics Corporation. Control knob for multiturn rotary switch. 3,719,163, Cl. 116-133.000.

Jennes, Gert; Huther, Edmund; and Wolff, Willi, to Bayer Aktiengesellschaft. Crosslinked chloroprene/diester polymer. 3,719,649, Cl. 260-86.300.

Jenssen, Sverre Knut, to Thermovatic Sverre K. Jenssen AB. Plate heat exchanger. 3,719,227, Cl. 165-166.000.

Jernstrom, Hans, to Tarrson, Sidney A., Company. Musical toy. 3,719,002, Cl. 46-1.00r.

Jessup, Harvey A.: *See—*
Du Bose, Charles R.; and Jessup, Harvey A., 3,719,913.

Jeumont-Schneider: *See—*
Darmon, Jacques; and Coffre, Philippe, 3,719,816.

Jewett, Warren R.: *See—*
Mandrona, Nicholas; and Jewett, Warren R., 3,719,075.

J.G. Furniture Company, Inc.: *See—*
Woods, David, 3,719,407.

Jimerson, James C.: *See—*
Anderson, Daniel J.; and Jimerson, James C., 3,719,602.

Johnson, Arthur L.: *See—*
Goldman, Martin; and Johnson, Arthur L., 3,719,486.

Johnson, Arthur O. Fuel flow restricting and filter assembly. 3,719,595, Cl. 210-445.000.

Johnson, Forrest H.: *See—*
Schmitt, Robert A.; Betts, Gary W.; Johnson, Forrest H.; and Carlson, Lloyd, 3,719,288.

Johnson, Jacob L. Expansion device for mounting an upright column to a base structure. 3,719,376, Cl. 287-20.300.

Johnson, Mead & Company: *See—*
Wu, Yao Hua; and Lobeck, Walter G., Jr., 3,719,671.

Johnson, Olin B.; and Labana, Santokh S., to Ford Motor Company. Polyester and graded acrylic rubber-urethane-acrylate paint and painting process. 3,719,521, Cl. 117-93.310.

Johnson, Olin B.; and Labana, Santokh S., to Ford Motor Company. Vinyl resin and acrylic rubber-urethane-acrylate paint and painting process. 3,719,522, Cl. 117-93.310.

Johnson, Olin B.; and Labana, Santokh S., to Ford Motor Company. Hydroxy-vinyl copolymer and graded-rubber paint and process. 3,719,523, Cl. 117-93.310.

Johnson, Thomas Albert, to Du Pont de Nemours, E. I., and Company. Intermediates for p-benzamide polymers. 3,719,642, Cl. 260-78.00a.

Johnson, Thomas C., to Easy-Back, Inc. Castered trailer for a vehicle. 3,719,373, Cl. 280-474.000.

Johnson, Thomas R.: *See—*
Harrison, Robert S.; and Johnson, Thomas R., 3,719,352.

Johnston, Robert F.; and Hendrickson, Kenneth L., to Bell & Howell Company. Reset control particularly for optical compensators. 3,719,418, Cl. 352-109.000.

Johnston, William V., to North American Rockwell Corporation. Synthesis of ionically conductive compositions of matter. 3,719,612, Cl. 252-518.000.

Johnston, William V., to North American Rockwell Corporation. Aqueous synthesis of ionically conductive compositions of matter. 3,719,746, Cl. 423-463.000.

Jolles, Georges, to Rhone-Poulenc S.A. Cyclopeptides. 3,719,656, Cl. 260-112.500.

Jonas, David Andrew; and Owen, William John, to Dow Corning Limited. Organosilicon polymers containing silacyclobutane structures. 3,719,696, Cl. 260-448.20d.

Jones, Gerald Cedric; and Leek, Herbert Bentley, to Saunders Valve Company Limited. Ball valve seating assemblies. 3,719,344, Cl. 251-174.000.

Jones, John Stephen: *See—*
Roberts, Richard M.; and Jones, John Stephen, 3,719,580.

Jones, Rex O., III.: *See—*
Holland, Eugene E.; and Jones, Rex O., III., 3,719,875.

Jones, William D., to American Metal Climax, Inc. Anti-pollution burner system. 3,719,471, Cl. 75-65.000.

Jonsson, Nils G., to American Modular Systems Designs, Inc. Construction panel. 3,719,768, Cl. 174-49.000.

Jordan, Charles E., to Lilly, Eli, and Company. Method of promoting growth and improving feed efficiency in poultry and swine via oral administration of cephalosporin C. 3,719,758, Cl. 424-246.000.

Jordan, Michael: *See—*
Bannister, John D.; Peters, Joseph C.; and Jordan, Michael, 3,719,086.

Jouffret, Michel: *See—*
Brunie, Jean Claude; Costantini, Michel; Crenne, Noel; and Jouffret, Michel, 3,719,706.

Joy, John Richard, to Union Carbide Corporation. Hydrolyzable functional sylyl alkyl alkyl peroxides. 3,719,650, Cl. 260-89.50a.

Jungermann, Eric; and Reich, Henry E., to Armour and Company. Germicidal compound and soap compositions incorporating the same. 3,719,605, Cl. 252-107.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Marui, Yasushi, 3,719,235.

Kabushiki Kaisha Ricoh: *See—*
Abe, Takeshi, 3,719,142.
Fujimoto, Sakae, 3,719,953.
Kurasawa, Makoto, 3,719,335.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Shimizu, Tetsuji; Hibino, Sohei; Miwa, Haruo; and Inagaki, Nobukatsu, 3,719,887.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Komatsu, Noboru; Arai, Tohru; and Mizutani, Masayoshi, 3,719,518.

Kadale Equipment Company: *See—*
Kazee, Robert B., 3,719,168.

Kaelon, Kenneth C., to Lockheed Aircraft Corporation. Device for turning an element. 3,719,112, Cl. 81-57.390.

Kafafian, Haig. Tactually interpretable cell and slate for forming the same. 3,718,991, Cl. 35-38.000.

Kalb, Henry T.: *See—*
Belz, Ronald A.; Kalb, Henry T.; and Trolinger, ames D., 3,719,889.

Kali-Chemie Aktiengesellschaft: *See—*
Hauschild, Ulrich; Holst, Rudolf; Kaspers, Hans-Heinz; and Dahme, Wolfgang, 3,719,464.
Paucksch, Heinrich; and Massonne, Joachim, 3,719,716.

Kallet, Eli A., to Farrand Optical Co., Inc. Mixing and measuring apparatus. 3,719,410, Cl. 356-36.000.

Kamei, Auto-Komfort Wolfsburg K. Meier KG: *See—*
Meier, Karl, 3,719,095.

Kamoshita, Gen-Ichi: *See—*
Ono, Kazumasa; Tanii, Takuya; Kamoshita, Gen-Ichi; Hirano, Mikio; and Motouchi, Masafumi, 3,719,567.

Kaneda, Masao: *See—*
Yamazaki, Seishi; and Kaneda, Masao, 3,719,892.

Kansen, Norbert Ernst Fritz; and Littmann, Walter Fritz Konrad, to U.S. Philips Corporation. Ion source for slow-ion sputtering. 3,719,582, Cl. 204-298.000.

Kantor International S.A.: *See—*
Mazza, Lamberto, 3,719,505.

Kao Soap Co., Ltd.: *See—*
Hattori, Kenichi; Ueda, Yuichi; and Tanino, Yukio, 3,719,631.

Karchmer, Jean H.; and Pennington, Robert E., to Esso Research and Engineering Company. Purging and washing coal naphtha to remove H_2S and basic nitrogen. 3,719,587, Cl. 208-208.00r.

Karlson, Eskil L.: *See—*
Shapiro, Jonathan S.; Verses, Christ J.; and Karlson, Eskil L., 3,719,017.

Karmas, George, to Ortho Pharmaceutical Corporation. Alkenyl esters of 2(lower alkyl)-3-(lower alkyl-4-aryl 3- or-4 cyclohexencarbinols. 3,719,693, Cl. 260-410.500.

Karsberg, Lars Anders Birger: *See—*
Simmons, Bjorn Herman Olof; and Karsberg, Lars Anders Birger, 3,719,339.

Kasama, Ryoji: *See—*
Shibata, Takanori; Kasama, Ryoji; Naito, Shotaro; and Maki, Shin, 3,719,881.

Kaspers, Hans-Heinz: *See—*
Hauschild, Ulrich; Holst, Rudolf; Kaspers, Hans-Heinz; and Dahme, Wolfgang, 3,719,464.

Kaspers, Helmut: *See—*

Buchel, Karl Heinz; Grewe, Ferdinand; Scheinpflug, Hans; Kaspers, Helmut; and Regel, Erik, 3,719,760.

Kato, Yasuo: *See—*
Masai, Yukito; Kato, Yasuo; and Fukui, Nobuhiko, 3,719,727.

Katz, Klaus; and Bulow, Manfred, to Daimler-Benz Aktiengesellschaft. Servo-steering system for vehicles. 3,719,124, Cl. 91-434.000.

Kawahata, Masayuki, to Environment/One Corporation. Periodically reversed gas flow ozone production method and apparatus. 3,719,573, Cl. 204-176.000.

Kawakami, Yukichika: *See—*
Segawa, Masahiro; and Kawakami, Yukichika, 3,719,644.

Kawano, Shigeru: *See—*
Oishi, Hiroshi; Aoki, Fumio; Kawano, Shigeru; Kudo, Yasushi; Kobayashi, Hideo; and Hyodo, Takeo, 3,719,928.

Kazee, Robert B., to Kadale Equipment Company. System for applying uniform layer of a flowable material to a substrate. 3,719,168, Cl. 118-306.000.

Kazuba, Robert J., to Pettibone Corporation. Billet manipulating unit. 3,719,286, Cl. 214-1.0qg.

Keck, Jerry L.; and Rowley, James Robert, to Ludlow Corporation. Fracturable adhesive backing. 3,719,548, Cl. 161-117.000.

Keely, Richard Thomas, to Burroughs, J. P., & Son, Inc. Apparatus and method for hydrokinetally cooking legumes. 3,719,502, Cl. 99-98.000.

Kelsall, Denis Fletcher; and Restarick, Clifford John, to Commonwealth Scientific and Industrial Research Organization. Determination of particle size distribution. 3,719,089, Cl. 73-432.0ps.

Kemp, Ray F.; Blanchard, Robert R.; and Chamberlin, Roger S., to Dow Chemical Company, The. Casing pipe and method of casing a borehole. 3,719,230, Cl. 166-315.000.

Kendall, Thomas L.; and Lincoln, Thomas C., to Becton, Dickinson Electronics Company. Thumbwheel switch assembly with improved gang housing interlocking means. 3,719,785, Cl. 200-11.0tw.

Kennametal Inc.: *See—*
Cantz, Rolf J., 3,719,478.

Kennedy, John P. Acoustic coupler. 3,719,783, Cl. 179-1.00c.

Kerr, Wayne L., to Schlumberger Technology Corporation. Electrical connector. 3,719,918, Cl. 339-90.00r.

Kerrigan, Charles M.: *See—*
Hai, Atta Mohammed; Kerrigan, Charles M.; and Leidy, Harold T., 3,719,499.
Leidy, Harold T.; Kerrigan, Charles M.; Tewey, Robert T.; and Bartenbach, Louis, 3,719,498.

Kidde, Walter, & Company, Inc., mesne: *See—*
Sterner, Russell L., 3,719,404.
Sung, Fu-Tien, 3,719,403.

Kiger, Norman L.: *See—*
Burton, Douglas G.; and Kiger, Norman L., 3,719,389.

Kijima, Shizumasa; and Minami, Norio, to Eisai Co. Ltd. Basic amino-acid salts of tocopherylsuccinate. 3,719,690, Cl. 260-345.500.

Kiltz, Gerald H.: *See—*
Holistein, Carl P., Jr.; Kiltz, Gerald H.; and Sordello, Frank J., 3,719,896.

King, John Edward, to Master Chemical Corporation. Aqueous cutting fluid which protects ferrous metals against corrosion. 3,719,598, Cl. 252-33.400.

King, John Frederick; and Packer, Robert Kenneth, to Magnesium Elektron Limited. Electric batteries and alloys therefor. 3,719,530, Cl. 136-100.00m.

King, Robert E.; and Thompson, David F., to Sylvania Electric Products, Inc. Process for making integrated circuit packages. 3,719,566, Cl. 204-15.000.

Kingsley, William; and Allis, Robert F., to Xerox Corporation. Wrap adjust device for controlling engagement between a web and roller in an imaging system. 3,719,951, Cl. 346-74.0tp.

Kinugasa, Terukazu: *See—*
Wakabayashi, Takashi; Kinugasa, Terukazu; Hozumi, Shiro; and Sugihara, Kanji, 3,719,933.

Kinzler, Fritz: *See—*
Efssel, Dietrich; Hiersign Heinz; Kinzler, Fritz; Russmann, Werner; and Schulz, Helmut, 3,719,060.

Kirkham, Harold: *See—*
Okell, Roy E.; Kirkham, Harold; and Kirkham, Kathleen E., 3,719,121.

Kirkham, Kathleen E.: *See—*
Okell, Roy E.; Kirkham, Harold; and Kirkham, Kathleen E., 3,719,121.

Kiryakov, Mikhail Akimovich: *See—*
Serebryakov, Nikolai Gennadievich; Dedenkov, Anatoly Nikolaevich; and Kiryakov, Mikhail Akimovich, 3,719,750.

Klein, Roy W.; Tremmel, Robert A.; and Clauss, Richard J., to Oxy Metal Finishing Corporation, mesne. Nickel electroplating composition and process. 3,719,568, Cl. 204-49.000.

Klingenberg, Hans Ulrich. Watchcase. 3,719,038, Cl. 58-88.00r.

Klug, Eugene D., to Hercules Incorporated. Preparation of cellulose ethers. 3,719,663, Cl. 260-231.00r.

Kmonk, Stanley: *See—*
Mayers, Joseph B.; and Kmonk, Stanley, 3,719,560.

Knapp, John F.: *See—*
Cade, Ronald L.; and Knapp, John F., 3,719,169.

Knight, Ralph M., to Dart Industries, Inc. High pressure process for polyethylene production. 3,719,643, Cl. 260-87.300.

Knollmueller, Karl O.; and Sieckhaus, John F., to Olin Corporation. Method for preparing poly-carboranylenesiloxane. 3,719,633, Cl. 260-46.50e.

Knox, Robin B.: *See—*
Bishop, Glick U.; and Knox, Robin B., 3,719,812.

Kobayashi, Hideo: *See—*
Oishi, Hiroshi; Aoki, Fumio; Kawano, Shigeru; Kudo, Yasushi; Kobayashi, Hideo; and Hyodo, Takeo, 3,719,928.

Kobayashi, Tadashi. Machine for relieving the fatigue of fingers. 3,719,184, Cl. 128-26.000.

Koehnen, Earl A., to Farmhand, Inc. Folding auger for portable feed mill and mixer. 3,719,268, Cl. 198-115.000.

Koike, Hiroshi: *See—*
Izumi, Hideki; Ichikawa, Ryoichi; Koike, Hiroshi; and Tanaka, Katsuyuki, 3,719,405.

Koiwa, Yoichi: *See—*
Fujimoto, Yasuo; Nagaoka, Koichi; Tatsukawa, Keizo; and Koiwa, Yoichi, 3,719,520.

Kolfertz, Erwin. External filters for aquaria. 3,719,278, Cl. 210-169.000.

Kolosky, Joseph Francis: *See—*
Galle, Edward Louis; Mikkelson, Marvin Olaf; and Kolosky, Joseph Francis, 3,719,497.

Komatsu, Noboru; Arai, Tohru; and Mizutani, Masayoshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Process of forming a carbide layer of vanadium, niobium or tantalum upon a steel surface. 3,719,518, Cl. 117-49.000.

Koninklijke Industrieele Maatschappij Noury & Van Der Lande N.V.: *See—*
Havinga, Reginoldus; and Swaters, Pieter D., 3,719,692.

Kono, Hisashi: *See—*
Suzukawa, Yuichi; Kono, Hisashi; Terai, Kenji; Kuribayashi, Atushi; Tamura, Yutaka; Fujii, Hiroshi; and Saito, Muneki, 3,719,029.

Koppius, Otto G. Impregnants for dispenser cathodes. 3,719,856, Cl. 313-346.0dc.

Korenaga, Itsuo: *See—*
Sekimoto, Yashuhiro; and Korenaga, Itsuo, 3,718,956.

Korinth, Hans, to Daimler-Benz Aktiengesellschaft. Ventilating system for vehicles. 3,719,134, Cl. 98-2.000.

Korn, Homer; Greenfield, Stephen J.; and Stemmle, Denis J., to Xerox Corporation. Sheet stacking apparatus. 3,719,266, Cl. 198-55.000.

Kovar, Donald G.: *See—*
Michels, Lawrence S.; Minka, George F.; Kovar, Donald G.; and Harper, Robert V., 3,719,927.

Kraaijenbrink, Hans, to De Staat der Nederlanden, Ten Deze Vertegenwoordigd door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie. Video repeater fault alarm system. 3,719,774, Cl. 178-6.000.

Kraftco Corporation: *See—*
Blaetz, Philip H.; and Corbige, Orin K., 3,719,138.
Hock, Walter L.; and Simon, Abraham, 3,719,056.

Kraklau, David M.; and Taylor, John H., to Advance Products Corporation. Surface indicator. 3,718,977, Cl. 33-172.00d.

Kronenberger, Paul E., to General Motors Corporation. Refrigerator cabinet construction for releasing foam insulation. 3,719,303, Cl. 220-9.00f.

Krulikoski, Stanley J., Jr.; and Dawson, Juan C. Method and apparatus for measuring parallax between points on stero images using a fourier transform hologram of one of the images. 3,719,420, Cl. 356-2.000.

Krut, Charles F. Collapsible garment hanger. 3,719,312, Cl. 223-94.000.

Kubo , Iwao. Feed mechanism for coil winders. 3,719,333, Cl. 242-158.400.

Kudo, Yasushi: *See—*
Oishi, Hiroshi; Aoki, Fumio; Kawano, Shigeru; Kudo, Yasushi; Kobayashi, Hideo; and Hyodo, Takeo, 3,719,928.

Kuhl, Walter Karl; and Wicking, Jens, to Elektromesstecknik Wilhelm Franz KG. Reverberation device. 3,719,905, Cl. 333-30.00r.

Kuhnash, Arthur R.: *See—*
Harding, Dale L.; and Kuhnash, Arthur R., 3,719,222.

Kuhnle, Judith A.: *See—*
Waiss, Anthony C., Jr.; Kuhnle, Judith A.; and Wiley, Mabry Fileen, 3,719,473.

Kunkel, Ernest O.: *See—*
Young, James W.; Cason, George A.; and Kunkel, Ernest O., 3,719,240.

Kuntz, Kenneth C., to Mallory, P. R., & Co., Inc. Synchronous motor. 3,719,842, Cl. 310-169.000.

Kupersmit, Julius B. Clip for rigid foam pallet. 3,719,342, Cl. 248-216.000.

Kuraray Co., Ltd.: *See—*
Hara, Kazuo; and Yoshitake, Toshihiko, 3,719,726.

Kurasawa, Makoto, to Kabushiki Kaisha Ricoh. Automatic film rewinding device for small movie projectors. 3,719,335, Cl. 242-186-.

Kurebayashi, Tokuhiro: *See—*
Oishi, Kazuo; Yoshida, Hiroshi; Ando, Noriyoshi; and Kurebayashi, Tokuhiro, 3,719,177.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Segawa, Masahiro; and Kawakami, Yukichika, 3,719,644.

Kuribayashi, Atushi: *See—*

Suzukawa, Yuichi; Kono, Hisashi; Terai, Kenji; Kuribayashi, Atushi; Tamura, Yutaka; Fujii, Hiroshi; and Saito, Muneki, 3,719,029.

Kurtz, Donald W.; and Heseltine, Donald W., to Eastman Kodak Company. Silver halide emulsion containing a dihydroaromatic quaternary salt nucleating agent and the use thereof. 3,719,494, Cl. 96-107.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Fujimoto, Yasuo; Nagaoka, Koichi; Tatsukawa, Keizo; and Koiwa, Yoichi, 3,719,520.
Tanaka, Katsunobu; Oshima, Kazuo; and Tokoro, Yoh, 3,719,561.

La Cehlophane: *See*—
Le Paranthoen, Rene; and Bonjour, Georges, 3,719,729.

Labana, Santokh S.: *See*—
Johnson, Olin B.; and Labana, Santokh S., 3,719,521.
Johnson, Olin B.; and Labana, Santokh S., 3,719,522.
Johnson, Olin B.; and Labana, Santokh S., 3,719,523.

Labatt, John, Limited: *See*—
Walmsley, Martin Francis; and Cross, John Valentene, 3,719,500.

Labore, Walter T., to Pitney-Bowes, Inc. Disposable inking device for printing apparatus. 3,719,143, Cl. 101-335.000.

Ladish Co.: *See*—
Werra, Bruno H., 3,719,343.
Zimmerly, Robert D., 3,719,191.

Lajiness, Wayne G.: *See*—
Vogt, Herwart C.; and Lajiness, Wayne G., 3,719,621.

Lake, David P., to General Motors Corporation. Voltaic cell and method using dilute fuel gases to generate electrical power. 3,719,529, Cl. 136-86.00r.

Lamb, George Edwin Robert; Prevorsek, Dusan Ciril; and Oswald, Hendrikus Johan, to Allied Chemical Corporation. Radiation curing of unsaturated polyester compositions. 3,719,539, Cl. 156-199.000.

Lambert, Sidney K.: *See*—
Puckett, Ray; and Lambert, Sidney K., 3,719,386.

Lamfers, Bernard: *See*—
Van Dyke, John; and Lamfers, Bernard, 3,719,874.

Lamm, Heinz, to Daimler-Benz Aktiengesellschaft. Rotary piston internal combustion engine, especially of trochoidal construction. 3,719,174, Cl. 123-8.090.

Lancy, Leslie E., to Resource Control, Inc. Electrolytic process. 3,719,570, Cl. 204-151.000.

Land, Edwin H., to Polaroid Corporation. Motion-picture system. 3,719,416, Cl. 352-72.000.

Land, Edwin H.; and Norris, Philip R., to Polaroid Corporation. Binocular rangefinder-viewfinder with Fresnel optics. 3,719,422, Cl. 356-8.000.

Lange, Roger J. Harvester sweeper. 3,719,034, Cl. 56-119.000.

Lanigan, Donald E.; and Biegert, Johannes P., to Lilly, Eli, and Company. Apparatus for conveying and filling capsules. 3,719,275, Cl. 209-79.000.

Lanoue, Gerard, to Societe Nouvelle Spidem. Cooling device for a continuous casting wheel. 3,719,224, Cl. 164-278.000.

Lapkin, Milton: *See*—
Wojtowicz, John A.; and Lapkin, Milton, 3,719,636.

Lapointe, Gabriel M., to Parker Mfg. Company. Wrench. 3,719,110, Cl. 81-116.000.

Lappin, Kenneth R.: *See*—
Buchtel, Dean H.; Lappin, Kenneth R.; and Maurer, John A., 3,718,974.
Buchtel, Dean H.; Lappin, Kenneth R.; and Maurer, John A., 3,719,308.

Larimore, David B.; and Christensen, Robert I., to Chevron Research Company. Purification of hydrogen. 3,719,740, Cl. 423-228.000.

Laroche, Rene, to Aluminium Suisse S.A. Process and apparatus for determining the porosity of a dielectric layer coating a metallic surface. 3,719,884, Cl. 324-54.000.

Larson, Arthur G., to McQuay, Inc. Ice dispensing device. 3,719,307, Cl. 222-236.000.

Larson, Eric M., Jr. Load handling container apparatus. 3,719,296, Cl. 214-315.000.

Latussek, Hans-Peter: *See*—
Ott, Hanns; Wenk, Jurgen; and Latussek, Hans-Peter, 3,719,865.

Lauffer, Fred E.: *See*—
Arcocha, Humberto L.; Dullabaun, Paul W.; and Lauffer, Fred E., 3,719,157.

Lawler, Harry A., to Carborundum Company, The. Reinforced laminated material. 3,719,545, Cl. 161-50.000.

Lawrence, Robert, to Burroughs Corporation. Circuit component mounting with cooling plate. 3,719,860, Cl. 317-100.000.

Lay, Frank M.; and McDowell, Allen W., to International Business Machines Corporation. Gas display panel dynamic honeycomb. 3,719,940, Cl. 340-324.00r.

Layman, Ralph Earl, to American Cyanamid Company. Nonlinear polyester resin compositions. 3,719,620, Cl. 260-22.00d.

Le Paranthoen, Rene; and Bonjour, Georges, to La Cehlophane. Oriented polypropylene resin modified polyethylene polyethylene terephthalate films with improved electrical properties. 3,719,729, Cl. 260-873.000.

Le Voy's, Inc.: *See*—
Pannier, Karl A., Jr.; Reynolds, Gordon S.; and Sorenson, James L., 3,719,197.

Lea, Bernard A., to Minnesota Mining and Manufacturing Company. Use of merocyanine compounds in photothermosensitive systems. 3,719,495, Cl. 96-114.100.

Lear Siegler, Inc.: *See*—
Quinby, Charles E., 3,719,092.

Leber, Fritz; Seumel, Karl-Gottfried; and Mohrle, Gunther, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Control system for hydraulic clutches of reversible gear-shift mechanism. 3,719,102, Cl. 74-364.000.

Lechner, Hadrian B., to Bausch & Lomb Incorporated. Inverted telephoto projection lenses. 3,719,413, Cl. 350-214.000.

Leclou, Andre, to Commissariat a l'Energie Atomique. Liquid-cooled nuclear reactor. 3,719,558, Cl. 176-65.000.

Lecoeur, Jacques, to Eclair International. Detachable film magazine for motion picture camera. 3,719,417, Cl. 352-78.00r.

Lee, Lester T. C.; and Hirsch, Stephen S., to Allied Chemical Corporation. Poly (amide-imide) polymers having recurring diketopiperazine groups. 3,719,640, Cl. 260-78.00a.

Lee, Raymond, Organization, Inc., The: *See*—
Rawlings, Charles S., 3,719,372.
Williams, David R., 3,719,037.

Lee, Robert D., to United States of America, National Aeronautics and Space Administration. Intruder detection system. 3,719,891, Cl. 325-61.000.

Leek, Herbert Bentley: *See*—
Jones, Gerald Cedric; and Leek, Herbert Bentley, 3,719,344.

Leheny, Robert Francis; and Shaklee, Kerry Lee, to Bell Telephone Laboratories, Incorporated. Method of determining the presence of stimulated emission or of measuring the net gain in materials for lasers. 3,719,423, Cl. 356-36.000.

Leidy, Harold T.: *See*—
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Leslie, Victor Jeffrey; and Rose, John Brewster, to Imperial Chemical Industries Limited. Aromatic sulphones and polymers produced therefrom. 3,719,714, Cl. 260-607.00a.

Levine, David J., to General Electric Company. High temperature metallic diffusion coating. 3,718,962, Cl. 29-195.000.

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Lewis, Herman L., Jr.: *See*—
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Lilly, Arnys C., Jr.; and Tiller, Calvin O., to Morris, Philip, Incorporated. Method of determining a reducible gas concentration and sensor therefor. 3,719,564, Cl. 204-1.00t.

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Makino, Katsuo; Oshikawa, Akira; and Nagashima, Toshio, to Xerox Corporation. Electrostatographic imaging process. 3,719,481, Cl. 96-1.00r.

Malaker, Stephen F., to Romayne Corporation. Transportable refrigeration system. 3,719,051, Cl. 62-6.000.

Mallett, James A.; and Mitchell, Edward B., to Ark-Les Switch Corporation. Pushbutton slide switch assemblies with interconnect laminated slider switch set assemblies allowing only one activated switch in a particular set. 3,719,786, Cl. 200-5.0eb.

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Manfroy, Willy; and Fleig, Adolf. Method for clarifying titanium sulphate solutions. 3,719,748, Cl. 423-544.000.

Marcy, Raymond, to Thomson-CSF. System for accurately positioning an object under the control of programmed numerical data. 3,719,879, Cl. 318-593.000.

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Martin, Patrick H.; and McFadden, Russell T., to Dow Chemical Company, The. Water thinnable coating compositions from aminoethylated interpolymers. 3,719,629, Cl. 260-33.2ep.

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Michels, Lawrence S.; Minka, George F.; Kovar, Donald G.; and Harper, Robert V., 3,719,927.
Minks, Ivan G.; and Minks, Melvin P. Automobile electrical system. 3,719,201, Cl. 137-351.000.
Minks, Melvin P.: *See—*
Minks, Ivan G.; and Minks, Melvin P., 3,719,201.
Minnesota Mining and Manufacturing Company: *See—*
Hampl, Edward F., Jr., 3,719,533.
Lea, Bernard A., 3,719,495.
Nelson, Donald D.; and Shevlin, Thomas S., 3,719,798.
Minolta Camera Kabushiki Kaisha: *See—*
Yamamoto, Masahiro; and Iida, Takeo, 3,719,274.
Miranda, Thomas J.: *See—*
Huemmer, Thomas F.; and Miranda, Thomas J., 3,719,638.
Miranda, Thomas J., to O'Brien Corporation, The. Radiation curable compositions. 3,719,728, Cl. 260-861.000.
Miron, Jerry: *See—*
Radtke, Shcrade F.; Miron, Jerry; Bhatt, Pradip; Shah, Bharat C.; and Skeist, Irving, 3,719,551.
Misawa, Chiyozi, to Misawa Homes Co., Ltd. Prefabricated house. 3,719,015, Cl. 52-236.000.
Misawa Homes Co., Ltd.: *See—*
Misawa, Chiyozi, 3,719,015.
Mishima, Nobuo: *See—*
Hama, Kinjiro; Mishima, Nobuo; and Miyamoto, Kazuo, 3,719,657.
Mita, Akio; and Ishida, Toshio, to Industrial Science & Technology, Agency of. Method for manufacturing sulfite pulp cooking liquor from sulfite pulp spent liquor. 3,719,705, Cl. 423-519.000.
Mitchell, Edward B.: *See—*
Mallett, James A.; and Mitchell, Edward B., 3,719,786.
Mittman, Emmanuel, to Grace, W. R., & Co. Abraded suede-like sheeting and process for same. 3,719,549, Cl. 161-119.000.
Miwa, Haruo: *See—*
Shimizu, Tetsuji; Hibino, Sohei; Miwa, Haruo; and Inagaki, Nobukatsu, 3,719,887.
Miyamoto, Kazuo: *See—*
Hama, Kinjiro; Mishima, Nobuo; and Miyamoto, Kazuo, 3,719,657.
Miyauchi, Hirokazu; and Matsubara, Hironaga, to Sumitomo Electric Industries, Ltd. Insulated electric cable having an external semiconductive layer. 3,719,769, Cl. 174-120.0sc.
Mizianty, Michael F., to GAF Corporation. Diazo-type reproduction process. 3,719,491, Cl. 96-49.000.
Mizuguchi, Ryuzo: *See—*
Nagata, Nobuyoshi; and Mizuguchi, Ryuzo, 3,719,619.
Mizutani, Masayoshi: *See—*
Komatsu, Noboru; Arai, Tohru; and Mizutani, Masayoshi, 3,719,518.
Mobil Oil Corporation: *See—*
Dennis, Charles L., 3,719,827.
Moeller & Neumann G.m.b.H.: *See—*
Bose, Georg Wilhelm, 3,719,285.
Mohrle, Gunther: *See—*
Leber, Fritz; Seumel, Karl-Gottfried; and Mohrle, Gunther, 3,719,102.
Molloy, Bryan B.; Fuller, Ray W.; and Hauser, Kenneth L., to Lilly, Eli, and Company. Fluorinated beta-phenyl-alpha-methylethylamines. 3,719,713, Cl. 260-570.50r.
Monchamp, Roch R.; Weber, Marvin J.; and Bass, Michael, to Raytheon Company. Laser with a monocrystalline $YA10_3$:Nd+ active medium. 3,719,901, Cl. 331-94.500.
Monnot, Max: *See—*
Barret, Jean Pierre; Monnot, Max; and Trognee, Jacques, 3,719,921.
Monsanto Company: *See—*
Bach, Hartwig C., 3,719,701.
Baker, Joseph W.; and Schumacher, Ignatius, 3,719,675.
Bergomi, Joseph G., Jr.; and Graham, Paul R., 3,719,628.
Bir, Wallace G.; and Tsang, Louis C., 3,719,720.
Emerson, Paul D.; Davis, S Jack; Oatfield, John C.; Engelman, Fred H.; and Bartee, Charles E. (said Emerson, said Oatfield, said Engelman and said Bartee assors. to), 3,719,210.
Emerson, Paul D.; Davis, S. Jack; Oatfield, John C.; Engelman, Fred H.; and Bartee, Charles E. (said Emerson, Oatfield, Engelman and said Bartee assors. to), 3,719,212.
Feiler, William A.; and Shen, Chung Yu, 3,719,694.
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Martin, Donald H.; Holmer, Donald A.; Durant, Dennis J.; Bryan, Roland J., Jr.; Saunders, James H.; and Black, William B., 3,719,547.
Rakestraw, Lawrence F.; and Mottern, John W., 3,719,733.
Montecatini Edison S.p.A.: *See—*
Minisci, Francesco; Bertini, Franco; Galli, Remo; Pizzo, Torricella Del; and Quilico, Adolfo, 3,719,685.
Moore, Earl P., Jr., to Du Pont de Nemours, E. I. and Company. Stable positively charged alumina coated silica sols and their preparation by post neutralization. 3,719,607, Cl. 252-313.00s.
Moran, Harry Hamilton. Thermoplastic bag. 3,719,318, Cl. 229-58.000.
Moreau, Claude, to Societe Financiere et Industrielle des Ateliers et Chantiers de Bretagne. Sealing system for chain conveyors. 3,719,264, Cl. 198-1.000.
Moreau, Jerry P.: *See—*
Chance, Leon H.; and Moreau, Jerry P., 3,719,448.
Morel, Joseph Julien: *See—*
Vezeau, Roland, 3,719,006.
Morgan, Fred Keith: *See—*
Hansley, Virgil L.; Greenberg, Harry; Morgan, Fred Keith; and Grinninger, Lowell D., 3,719,730.
Morganite Research and Development Limited: *See—*
Dorril, David Trevor; and Cooper, Charles Frank, 3,719,553.
Mororola, Inc.: *See—*
Free, Maurice George, 3,719,833.
Morris, Alton R.: *See—*
Frantz, Richard J.; and Morris, Alton R., 3,719,859.
Morris, Louis P.; and Dykzeuh, Theodore J., to Robertshaw Controls Company. Reversing lever mechanism for a thermostatic control device. 3,719,320, Cl. 236-48.000.
Morris, Philip, Incorporated: *See—*
Lilly, Arnys C., Jr.; and Tiller, Calvin O., 3,719,564.
Morris, William Meldrum; and Lindsay, Norman Matheson, to National Research Development Corporation. Flowmeters. 3,719,083, Cl. 73-204.000.
Morrison, Jerry L.: *See—*
Muir, Francis; and Morrison, Jerry L., 3,719,924.
Morse, Theodore H.: *See—*
Trachienberg, William; and Morse, Theodore H., 3,719,165.
Mosler Safe Company, The: *See—*
Potzick, Anthony J., 3,719,064.
Motorola, Inc.: *See—*
Eberhard, Everett, 3,719,835.
Gaicki, Stanley, 3,719,862.
Segerson, Eugene E., 3,718,969.
Zoroglu, Demir S., 3,719,535.
Motouchi, Masafumi: *See—*
Ono, Kazumasa; Tanii, Takuya; Kamoshita, Gen-Ichi; Hirano, Mikio; and Motouchi, Masafumi, 3,719,567.
Mottern, John W.: *See—*
Rakestraw, Lawrence F.; and Mottern, John W., 3,719,733.
Mottier, Francois, to Brown, Boveri & Company Limited. Apparatus for the holographic analysis of oscillating objects. 3,719,076, Cl. 73-71.300.
Mowdood, Syed K.; and Gebhart, Charles J., to Goodyear Tire & Rubber Company, The. Vinyl chloride polymers having improved thermal stability and method of making. 3,719,624, Cl. 260-23.0xa.
Mrozik, Helmut H., to Merck & Co., Inc. Polyhaloalkoxy salicylanilides and thios alicylanilides. 3,719,707, Cl. 260-551.00s.
Mueller, Johannes: *See—*
Bickel, Hans; Bosshardt, Rolf; and Mueller, Johannes, 3,719,673.
Mueller, Peter F., to Technical Operations, Incorporated. Spectral zonal information storage and retrieval. 3,719,127, Cl. 95-12.200.
Mueller, Rolf K., to Bendix Corporation, The. Increased field of view of detector array. 3,719,948, Cl. 343-113.00r.
Mugnier, Robert: *See—*
Berthoux, Jean; Hostein, Charles; and Mugnier, Robert, 3,719,578.
Muir, Francis; and Morrison, Jerry L., to Chevron Research Company. Anti-aliasing of spatial frequencies by geophone and source placement. 3,719,924, Cl. 340-15.5af.
Mulasmajic, Dzemal. Magnetic wheel. 3,719,395, Cl. 301-5.00r.
Muller-Calgan, Helmut: *See—*
Unger, Richard; and Muller-Calgan, Helmut, 3,719,684.
Multifastener Corporation: *See—*
Steward, Jerry H., 3,718,965.
Munch, Werner: *See—*
Drummer, Max; Michael, Wolfgang; Munch, Werner; and Riegert, Rupert, 3,719,091.

Munson, William A., to Westinghouse Electric Corporation. Blast furnace computer control utilizing feedback corrective signals. 3,719,811, Cl. 235-151.120.

Murakami, Yoichi; and Watanabe, Hikaru, to Dainippon Ink and Chemicals, Incorporated. Resinous composition containing polyester-epoxide resin adduct and etherified amin-aldehyde resin. 3,719,725, Cl. 260-834.000.

Muri, George, to DBM Industries Limited. Portable punch. 3,719,115, Cl. 83-414.000.

Murphy, Willard G., to McGraw-Edison Company. Steam-dry travel iron. 3,718,997, Cl. 38-90.000.

Murray, James E.; and Foley, Richard G., to Harris-Intertype Corporation. Stop signal inhibit control for paper cutting machines. 3,719,877, Cl. 318-467.000.

Murray, Robert L. Shut-off valve for liquid dispensing nozzle. 3,719,215, Cl. 141-207.000.

Musarra, Gaetano: *See—*
Franco, Borciani; and Musarra, Gaetano, 3,719,890.

Musgrave, Orly, to Boise Cascade Corporation, mesne. Mobile unit with improved suspension structure. 3,719,371, Cl. 280-96.20r.

Musick, Victor S.; and Fontaine, Bernard E., to General Electric Company. Articulated sleeve for turbine bucket lashing. 3,719,432, Cl. 416-196.000.

Muzyczko, Thaddeus M.: *See—*
Shore, Samuel; and Muzyczko, Thaddeus M., 3,719,596.

Myers, Dick T. Roller chain. 3,719,100, Cl. 74-246.000.

N L Industries, Inc.: *See—*
Lynd, Langtry E.; and Miklebust, Olav, 3,719,468.

N. V. Nederlandse Kraanbouw Mij.: *See—*
Siegmund, Frederik Willem, 3,719,300.

Naber, Charles T.; and Lockwood, George C., to National Cash Register Company, The. Semiconductor memory device. 3,719,866, Cl. 317-235.00r.

Nabesco, Inc.: *See—*
Albrecht, Robert J.; Griner, Arthur J.; and Hoagland, Frank V. N., 3,719,019.

Nadelson, Jeffrey: *See—*
Houlihan, William J.; and Nadelson, Jeffrey, 3,719,280.

Nagamatsu, Brian H., to Ford Motor Company. Catalytic converter structure. 3,719,457, Cl. 23-288.00f.

Nagaoka, Koichi: *See—*
Fujimoto, Yasuo; Nagaoka, Koichi; Tatsukawa, Keizo; and Koiwa, Yoichi, 3,719,520.

Nagashima, Toshio: *See—*
Makino, Katsuo; Oshikawa, Akira; and Nagashima, Toshio, 3,719,481.

Nagata, Nobuyoshi; and Mizuguchi, Ryuzo, to Nippon Paint Co., Ltd. Quick drying coatings containing copolymers having t-aliphatic hydrocarbon groups and t-aliphatic alkyd resins. 3,719,619, Cl. 260-22.0cb.

Naito, Shotaro: *See—*
Shibata, Takanori; Kasama, Ryoji; Naito, Shotaro; and Maki, Shin, 3,719,881.

Nakase, Yoshiaki: *See—*
Yoshida, Masaru; Nakase, Yoshiaki; and Ito, Akihiko, 3,719,637.

National Cash Register Company, The: *See—*
Naber, Charles T.; and Lockwood, George C., 3,719,866.

National Distillers and Chemical Corporation: *See—*
Hansley, Virgil L.; Greenberg, Harry; Morgan, Fred Keith; and Grinninger, Lowell D., 3,719,730.
Lerman, Frank, 3,719,472.

National Research Development Corporation: *See—*
Morris, William Meldrum; and Lindsay, Norman Matheson, 3,719,083.

National Starch and Chemical Corporation: *See—*
Tessler, Martin M., 3,719,662.

National Waterpure Corporation: *See—*
Borochaner, Stuart, 3,719,594.

Natter, Bernd: *See—*
Sedlatschek, Karl; Machenschalk, Rudolf A.; and Natter, Bernd, 3,719,854.

Navone, Lorenzo. Device for locking the carriage of an electric typewriter. 3,719,263, Cl. 197-193.000.

Nedelec, Lucien: *See—*
Bucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, 3,719,691.

Neece, Delbert M. High speed shield cultivator leveler. 3,719,234, Cl. 172-135.000.

Nelmor Incorporated, mesne: *See—*
Horwitt, Laurence G.; and Mattis, Donald J., 3,719,105.

Nelson, Donald D.; and Shevlin, Thomas S., to Minnesota Mining and Manufacturing Company. Thermostatically controlled heating implement. 3,719,798, Cl. 219-512.000.

Neri, Vincenzo. Chair for use in dentistry. 3,719,391, Cl. 297-341.000.

New Jersey Machine Corporation: *See—*
Rosenberg, Harry, 3,719,021.

Niccolai, Adriano, to Honeywell Information Systems Italia S.p.A. High-speed printer with selectively operable print hammer. 3,719,139, Cl. 101-93.00c.

Niebylski, Leonard M.: *See—*
Jarema, Chester P.; and Niebylski, Leonard M., 3,719,223.

Niedrach, Leonard W.; and Stoddard, William H., Jr., to General Electric Company. Sensor with ion exchange resin electrolyte. 3,719,575, Cl. 204-195.00p.

Nippert, Charles R., Sr., to Bethlehem Steel Corporation. Apparatus for measuring strand. 3,718,976, Cl. 33-129.000.

Nippon Paint Co., Ltd.: *See—*
Nagata, Nobuyoshi; and Mizuguchi, Ryuzo, 3,719,619.

Nippon Telegraph and Telephone Public Corporation: *See—*
Ono, Kazumasa; Tanii, Takuya; Kamoshita, Gen-Ichi; Hirano, Mikio; and Motouchi, Masafumi, 3,719,567.

Nippondenso Co. Ltd.: *See—*
Oishi, Kazuo; Yoshida, Hiroshi; Ando, Noriyoshi; and Kurebayashi, Tokuhiro, 3,719,177.

Nippondenso Kabushiki Kaisha: *See—*
Shinoda, Kazuo; and Endo, Kunio, 3,719,176.

Nishida, Koji: *See—*
Takayama, Katuki; Nishida, Koji; and Yamazaki, Hayao, 3,719,398.

Nishiguchi, Masaru: *See—*
Okamoto, Toyohiko; Chihiro, Hayashi; and Nishiguchi, Masaru, 3,719,066.

Nissan Motor Co., Ltd.: *See—*
Shibata, Takanori; Kasama, Ryoji; Naito, Shotaro; and Maki, Shin, 3,719,881.

Nissen, Donald A.: *See—*
Carlsten, Ronald W.; and Nissen, Donald A., 3,719,527.

Noble, Euan, to Schlumberger Technology Corporation. Well survey instrument housing. 3,719,088, Cl. 73-431.000.

Noetzelmann, David C., Sr.: *See—*
Bodine, Norman R.; and Noetzelmann, David C., Sr., 3,719,272.

Noma Lites Canada Limited: *See—*
Norton, Ian F., 3,719,340.

Nordin, Karl Olof, to Forsheda Gummifabric AB. Reinforced pipe joint. 3,719,375, Cl. 285-339.000.

Nordstrom, John D., to Ford Motor Company. Epoxy resin-siloxane paint. 3,719,723, Cl. 260-827.000.

Noreen, Donald H.: *See—*
Billingsley, Raymond L.; Howard, Ralph L.; and Noreen, Donald H., 3,719,287.

Norris, Philip R.: *See—*
Land, Edwin H.; and Norris, Philip R., 3,719,422.

North American Rockwell Corporation: *See—*
Accountius, Oliver E., 3,719,452.
Du Bose, Charles R.; and Jessup, Harvey A., 3,719,913.
Dukes, Sam E.; and Maki, Edwin C., 3,719,253.
Johnston, William V., 3,719,612.
Johnston, William V., 3,719,746.
Pentecost, Eugene E., 3,719,883.
Topol, Leo E., 3,719,609.
Topol, Leo E.; and Mandel, Herman, 3,719,611.

Northern Electric Company Limited: *See—*
McLean, John; and Charron, Louis Donald, 3,718,971.
Van Der Puije, Patrick David, 3,719,895.
Zuber, Bretislav Paul, 3,719,315.

Norton Company: *See—*
Topping, Robert L., 3,719,461.

Norton, Ian F., to Noma Lites Canada Limited. Tree stand. 3,719,340, Cl. 248-48.000.

Nowicki, Ronald J., to General Motors Corporation. Vehicle roof ski rack. 3,719,297, Cl. 214-450.000.

Nuclear Power Group Limited, The: *See—*
Cooke, Brian Frederick, 3,719,072.

Nutzel, Karl: *See—*
Schuster, Herbert; Nutzel, Karl; Dinges, Karl; and Ott, Karl-Heinz, 3,719,731.

Oak Electro/Netics Corporation: *See—*
Jedynak, Leo; and Gusaras, Vladas, 3,719,163.

Oatfield, John C.: *See—*
Emerson, Paul D.; Davis, S Jack; Oatfield, John C.; Engelman, Fred H.; and Bartee, Charles E., 3,719,210.
Emerson, Paul D.; Davis, S. Jack; Oatfield, John C.; Engelman, Fred H.; and Bartee, Charles E., 3,719,212.

Obara, Ayatoshi: *See—*
Hayashi, Yoshiro; and Obara, Ayatoshi, 3,719,592.

Oberkirch, Wolfgang; Pampus, Gottfried; and Gunther, Peter, to Bayer Aktiengesellschaft. Polymerization of cyclopentene. 3,719,652, Cl. 260-93.100.

Obermaier, Alfred A.; and Pierman, Martin J., to Alnor Instrument Company; division of Illinois Testing Laboratories, Inc. Air velocity measuring system. 3,719,082, Cl. 73-202.000.

O'Brien Corporation, The: *See—*
Miranda, Thomas J., 3,719,728.

Odell, Norman Raymond: *See—*
Brasher, James Alan; Bozeman, Paul Preston; and Odell, Norman Raymond, 3,719,585.

Oehler, Carl W. Pallet type load transport apparatus. 3,719,299, Cl. 214-515.000.

Oertel, Harald: *See—*
Thomas, Wilhelm; Oertel, Harald; Rinke, Heinrich; and Bahr, Ulrich, 3,719,708.

Ogawa, Takuzo; and Iimura, Masao, to Hitachi, Ltd. Light sensitive thyristor. 3,719,863, Cl. 317-235.00r.

Ohio State University, The: *See—*
McMaster, Robert C.; and Rhoten, Merle L., 3,719,824.

Ohnuma, Yoshio: *See—*
Fujiyasu, Tatsuo; and Ohnuma, Yoshio, 3,719,776.

Ohono, Tadao; Shimizu, Chiaki; and Iwatani, Junichi, to Shionogi & Co., Ltd. Mixer-settler extractor. 3,719,455, Cl. 23-270.500.

Oishi, Hiroshi; Aoki, Fumio; Kawano, Shigeru; Kudo, Yasushi; Kobayashi, Hideo; and Hyodo, Takeo, to Hitachi, Ltd. and Tokyo Electric Power Co., The. Sweep signal meter reading system. 3,719,928, Cl. 340-151.00r.

Oishi, Kazuo; Yoshida, Hiroshi; Ando, Noriyoshi; and Kurebayashi, Tokuhiro, to Nippondenso Co. Ltd. Signal generating system for internal combustion engines. 3,719,177, Cl. 123-148.00e.

Okamoto, Toyohiko; Chihiro, Hayashi; and Nishiguchi, Masaru, to Sumitomo Metal Industries, Ltd. Piercing rolling apparatus for producing rolled material free from surface torsion. 3,719,066, Cl. 72-97.000.

Okell, Roy E.; Kirkham, Harold; and Kirkham, Kathleen E., to Franklin Mint Corporation. Reducing apparatus and method. 3,719,121, Cl. 90-13.700.

Okolowicz, Marian A.: *See—*
Harlam, Gerald F.; and Okolowicz, Marian A., 3,718,949.

Oldani, Francesco: *See—*
Crivellaro, Gianbattista; and Oldani, Francesco, 3,719,599.

O'Leary, Walter E., to ACF Industries, Incorporated. Railway flat car having stub center sills. 3,719,155, Cl. 105-367.000.

Olin Corporation: *See—*
Knollmueller, Karl O.; and Sieckhaus, John F., 3,719,633.
Saeman, Walter C., 3,719,745.
Wojtowicz, John A.; and Lapkin, Milton, 3,719,636.

Olin Corporation, mesne: *See—*
Graves, Howard K., 3,719,098.

Olivetti, Ing., C., & C., S.p.A.: *See—*
Antonio, Ezio Dell; and Tarizzo, Quinto, 3,719,330.

Olstowski, Franciszek, to Dow Chemical Company, The. Oxidation resistant graphite compositions. 3,719,608, Cl. 252-506.000.

Omark Industries, Inc.: *See—*
Southland, John Robert, 3,719,459.

Omura, Masuo: *See—*
Matumoto, Kenji; Omura, Masuo; and Tsunoo, Masahiko, 3,719,767.

O'Neill, Gerald L.: *See—*
Ripley, Charles C.; and O'Neill, Gerald L., 3,719,524.

Ono, Kazumasa; Tanii, Takuya; Kamoshita, Gen-Ichi; Hirano, Mikio; and Motouchi, Masafumi, to Nippon Telegraph and Telephone Public Corporation and Hitachi, Ltd. Method for producing a contact reed. 3,719,567, Cl. 204-34.000.

Orazagos Gumiipiri Vallalat: *See—*
Horvath, Laszlo; Gundisch, Gusztav; Antal, Mandor; and Arvai, Mihaly, 3,719,219.

Ornig, Hermann: *See—*
Plockinger, Erwin; Ornig, Hermann; and Schmidt, Alfred, 3,719,790.

Ortho Pharmaceutical Corporation: *See—*
Karmas, George, 3,719,693.

Oshikawa, Akira: *See—*
Makino, Katsuo; Oshikawa, Akira; and Nagashima, Toshio, 3,719,481.

Oshima, Kazuo: *See—*
Tanaka, Katsunobu; Oshima, Kazuo; and Tokoro, Yoh, 3,719,561.

O'Sullivan, Michael R.: *See—*
Herman, Elvin E.; and O'Sullivan, Michael R., 3,719,942.

Oswald, Hendrikus Johan: *See—*
Lamb, George Edwin Robert; Prevorsek, Dusan Ciril; and Oswald, Hendrikus Johan, 3,719,539.

Ott, Hanns; Wenk, Jurgen; and Latussek, Hans-Peter, to Siemens Aktiengesellschaft. Brushless direct-current motor including mechanically adjustable galvanomagnetic members. 3,719,865, Cl. 318-254.000.

Ott, Karl-Heinz: *See—*
Schuster, Herbert; Nutzel, Karl; Dinges, Karl; and Ott, Karl-Heinz, 3,719,731.

Otte, Richard F.: *See—*
Fischer, Christopher L.; and Otte, Richard F., 3,719,917.

Ouska, Ralph C., to FMC Corporation. Clamp mechanism for rotary car dumper. 3,719,292, Cl. 214-55.000.

Owen, Robert E.: *See—*
Harner, Robert H.; Meister, Otto; and Owen, Robert E., 3,719,912.

Owen, William John: *See—*
Jonas, David Andrew; and Owen, William John, 3,719,696.

Owens-Corning Fiberglas Corporation: *See—*
Cross, Donald E.; and Blackburn, William E., 3,719,579.
Philipps, Thomas E., 3,718,954.

Owens-Illinois, Inc.: *See—*
Arcocha, Humberto L.; Dullabaun, Paul W.; and Lauffer, Fred E., 3,719,157.
Lewis, Albert D., 3,719,463.

Oxy Metal Finishing Corporation, mesne: *See—*
Klein, Roy W.; Tremmel, Robert A.; and Clauss, Richard J., 3,719,568.

Ozretich, Thomas M., to Dow Chemical Company, The. Composition and method for controlling undesirable plant growth. 3,719,465, Cl. 71-88.000.

Packer, Robert Kenneth: *See—*
King, John Frederick; and Packer, Robert Kenneth, 3,719,530.

Pahlitzsch, Bruno. Device for applying adhesive to envelopes, bags or the like. 3,719,167, Cl. 118-211.000.

Palfreyman, Jack; Middleton, Henry Edward; and Baker, Alan Anthony, to Secretary of State for Defence, mesne. Epicyclic weaving of fibre discs. 3,718,952, Cl. 28-15.000.

Palm, John Stanley. Camper hold-down bracket. 3,719,382, Cl. 296-23.0mc.

Pampus, Gottfried: *See—*
Oberkirch, Wolfgang; Pampus, Gottfried; and Gunther, Peter, 3,719,652.

Pan American Petroleum Corporation: *See—*
Froning, H. R.; and Askew, Warren S., 3,719,606.

Pannier, Karl A., Jr.; Reynolds, Gordon S.; and Sorenson, James L., to Le Voy's, Inc. Aseptic suction drainage system and valve therefor. 3,719,197, Cl. 137-205.000.

Parekh, Girish Girdhar; and Blank, Werner Josef, to American Cyanamid Company. Compositions containing cyclic trisulfones. 3,719,627, Cl. 260-29.4ua.

Parker Mfg. Company: *See—*
Lapointe, Gabriel M., 3,719,110.

Parker, Vernon D., to Union Oil Company of California. High-melting wax compositions. 3,719,625, Cl. 260-28.5av.

Parlin, David B., to Bigelow-Sanford, Inc. Lubricated non-woven fabric. 3,719,546, Cl. 161-55.000.

Pasbrig, Max. Rope clamp. 3,718,951, Cl. 24-126.000.

Pastan, Harvey L., to Eastern Company, The, mesne. Linear output boat speedometer. 3,719,078, Cl. 73-181.000.

Patel, Pravin K.; and Liu, Joo H., to Control Data Corporation, mesne. Magnetic record members having a protective recording surface and method of making. 3,719,525, Cl. 117-237.000.

Paucksch, Heinrich; and Massonne, Joachim, to Kali-Chemie Aktiengesellschaft. Process of making difluorochlorobromomethane. 3,719,716, Cl. 260-653.000.

Pearl, David Raymond: *See—*
Gerber, Heinz Joseph; and Pearl, David Raymond, 3,719,113.

Peck & Hale, Inc.: *See—*
Schultz, Robert D.; and Di Martino, John, 3,719,377.

Peck, Reese A.: *See—*
Herbstman, Sheldon; Peck, Reese A.; Guptill, Frank E., Jr.; and Wilson, Raymond F., 3,719,589.

Peduto, Ralph; and Prak, Jan Willem L., to Bulova Watch Company, Inc. Temperature compensating digital system for electromechanical resonators. 3,719,838, Cl. 310-8.100.

Pence, Clarence M.: *See—*
Benjamin, George N., III; and Pence, Clarence M., 3,719,444.

Pennington, Robert E.: *See—*
Karchmer, Jean H.; and Pennington, Robert E., 3,719,587.
Vernon, Lonnie W.; and Pennington, Robert E., 3,719,588.

Pennwalt Corporation: *See—*
Thomas, Telfer L.; and Shetty, Bola Vithal, 3,719,710.

Pentecost, Eugene E., to North American Rockwell Corporation. Magnetic core circuit for testing electrical short circuits between leads of a multi-lead circuit package. 3,719,883, Cl. 324-51.000.

Pentron Industries, Inc.: *See—*
Sampey, Harry R., 3,719,888.

Penwalt Corporation: *See—*
Shetty, Bola Vithal, 3,719,669.

Pera, John D.: *See—*
Buckman, Stanley J.; and Pera, John D., 3,719,509.

Pere, Francois Caillarec, to Capic-Etablissements Caillarec. Device for heat treatment by way of forced gas convection, forming a bakery, pastry, pork-butchery oven or the like. 3,719,180, Cl. 126-21.00a.

Perkins Engines Limited: *See—*
Stewart, William Findlay, 3,719,178.

Perlman, David E. Photoelectric intruder detection device. 3,719,938, Cl. 340-258.00b.

Perugini, Giancarlo. Process of forming protective coatings on metallic surfaces by spraying a combination of powders of a metal alloy, chromium and a ceramic oxide. 3,719,519, Cl. 117-71.00m.

Peruglia, Marco, to Fiat Societa per Azioni. Solenoid-operated hydraulic switching valve. 3,719,401, Cl. 303-21.00f.

Pet Incorporated: *See—*
Fullington, William H.; and Maisak, Melvin O., 3,719,408.

Peters, Joseph C.: *See—*
Bannister, John D.; Peters, Joseph C.; and Jordan, Michael, 3,719,086.

Peters Machinery Company: *See—*
Talbot, Richard C.; Rose, Edward; and Roth, Hobert A., 3,719,020.

Peters, Yolanda A.: *See—*
Michael, Keith W.; and Peters, Yolanda A., 3,719,697.

Peterson, Maurice L. Movable feed bunk. 3,719,170, Cl. 119-52.0af.

Peterson, Stephen G. Container supporting pedestal for cargo-carrying vehicles. 3,719,794, Cl. 105-366.00d.

Petrie, James Alexander: *See—*
Dawson, Lindsay Grahame; Petrie, James Alexander; and Bracey, Kenneth Edward George, 3,719,439.

Petro-Tex Chemical Corporation: *See—*
Tschopp, Lloyd D., 3,719,722.

Petrolite Corporation: *See—*
Turner, Delber W., 3,719,584.

Pettibone Corporation: *See—*
Kazuba, Robert J., 3,719,286.

Petzetakis, Nicholas G., to Unifoam A.G., mesne. Method for producing polyurethane foam blocks which have flat upper surfaces. 3,719,734, Cl. 264-51.000.

Peyrot, Jean-Pierre. Mobile fluid-tight sealing device. 3,719,791, Cl. 219-121.0eb.

Pfaff, Maurice: *See—*
Barr, Charles R.; and Pfaff, Maurice, 3,719,492.

Philipps, Thomas E., to Owens-Corning Fiberglas Corporation. Method for producing a nonwoven reinforcement structure. 3,718,954, Cl. 28-77.000.

Phillips Petroleum Company: *See—*
De Marco, Salvador S.; and Harper, Ernest A., 3,719,053.
Erdman, John G., 3,719,453.

Photocircuits Division of Kollmorgen Corporation: *See—*
Herrmann, Gunther, 3,719,565.

Pickering, Charles B.: *See—*
Sangster, Arlon G.; Pickering, Charles B.; and McNamara, Thomas J., 3,719,926.

Pierman, Martin J.: *See—*
Obermaier, Alfred A.; and Pierman, Martin J., 3,719,082.

Piester, Leroy E.: *See—*
Brown, Lawrence W.; and Piester, Leroy E., 3,719,145.

Pilling Chain Co. Inc.: *See—*
Harlam, Gerald F.; and Okolowicz, Marian A., 3,718,949.

Pillsbury Company, The: *See—*
Galle, Edward Louis; Mikkelson, Marvin Olaf; and Kolosky, Joseph Francis, 3,719,497.

Pincus, Anthony Godfrey. Resonant circuit apparatus for detecting electromagnetic conductive bodies. 3,719,882, Cl. 324-3.000.

Pioneer Electronic Corporation: *See—*
Maekawa, Kouji, 3,719,250.

Pippert, Aaron J., to Utex Industries, Inc. Heterogeneous lip-type packings. 3,719,366, Cl. 277-205.000.

Pitney-Bowes, Inc.: *See—*
Labore, Walter T., 3,719,143.

Pizzo, Torricella Del: *See—*
Minisci, Francesco; Bertini, Franco; Galli, Remo; Pizzo, Torricella Del; and Quilico, Adolfo, 3,719,685.

Place, Harold; and Cheshire, Alan Gillingham, to Lucas, Joseph, (Industries) Limited. Liquid atomizing devices. 3,719,326, Cl. 239-406.000.

Plasser, Franz, Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef; and Benda, Ekkehardt, 3,719,150.

Platemakers Educational & Research Institute: *See—*
Davidson, Glenn G., 3,719,806.

Plockinger, Erwin; Ornig, Hermann; and Schmidt, Alfred, to Gebruder Bohler & Co. Aktiengesellschaft. Composition and method for forming a weld-surfaced alloyed steel layer on steel. 3,719,790, Cl. 219-73.000.

Ploeg, Martinus: *See—*
Fontein, Freerk J.; Ploeg, Martinus; and Van Linden, Jacques, 3,719,204.

Ploppa, Jurgen: *See—*
Hadam, Wilhelm; and Ploppa, Jurgen, 3,719,061.

Plotnikoff, Nicholas Peter, to Abbott Laboratories. Method of enhancing memory and learning. 3,719,761, Cl. 424-274.000.

Podlas, Thomas J., to Hercules Incorporated. Process of preparing CMC gels. 3,719,503, Cl. 99-129.000.

Poilleux, Jean-Loup; and Tourret, Jean, to Compagnie des Compteurs. Optical device for determining the position of a point on a surface. 3,719,421, Cl. 356-4.000.

Polaroid Corporation: *See—*
Buzzell, Harold O., 3,719,544.
Cieciuch, Ronald F. W.; Luhowy, Roberta R.; Meneghni, Frank A.; and Rogers, Howard G., 3,719,489.
Downey, Rogers B., 3,719,309.
Land, Edwin H., 3,719,416.
Land, Edwin H.; and Norris, Philip R., 3,719,422.
Locatell, Louis, Jr.; Meneghini, Frank A.; and Rogers, Howard G., 3,719,488.

Pollution Control Industries Inc.: *See—*
Shapiro, Jonathan S.; Verses, Christ J.; and Karlson, Eskil L., 3,719,017.

Polyspede Electronics Corporation: *See—*
Miller, Luther B., 3,719,876.

Porsche, Dr.-Ing. H.c.F., K.G., Firma: *See—*
Bott, Helmuth, 3,719,246.

Portec, Inc.: *See—*
Broling, Keith W., 3,719,156.

Porter, Allan W. H. Yarn holding device for a picking element of a loom. 3,719,211, Cl. 139-122.00n.

Porter, David H.; and Raddatz, Gene R., to Thomas Industries, Inc. Mounting device for lighting fixtures. 3,719,818, Cl. 240-52.00r.

Porter, James E., Jr. Adjustable and folding outdoor grill and crane. 3,719,181, Cl. 166-30.000.

Possell, Clarence R. Pressure sensitive sensor and control unit and method of using same. 3,719,836, Cl. 307-308.000.

Post Office, The: *See—*
Bragg, Eric William, 3,719,904.

Potzick, Anthony J., to Mosler Safe Company, The. Combination lock with lineally movable cam followers and nonsequentially acting tumbler holders. 3,719,064, Cl. 70-299.000.

Poulos, George. Measuring construction. 3,718,980, Cl. 33-174.00g.

PPG Industries, Inc.: *See—*
Makhlouf, Joseph M., 3,719,618.
Reich, Donald A.; and Stevens, Henry C., 3,719,689.

Praestmark, T.: *See—*
Engstrom, John Bertil, 3,718,950.

Prak, Jan Willem L.: *See—*
Peduto, Ralph; and Prak, Jan Willem L., 3,719,838.

Precision Metalsmiths, Inc.: *See—*
Erndt, Edmund E., 3,719,214.

Precision Screen Machines Inc.: *See—*
Jaffa, David; and Miller, James D., 3,719,141.

Preisser, Gunther. Device for use in connection with spinning and twisting machines for guiding the thread from the drafting mechanism to the spindle. 3,719,036, Cl. 57-106.000.

Prentice, Winslow W., to United States of America, Navy. Low loss electrical conductive coating and bonding materials including magnetic particles for mixing. 3,719,610, Cl. 252-513.000.

Pressnell, Douglas C. Container holder. 3,719,305, Cl. 220-85.00h.

Prevorsek, Dusan Ciril: *See—*
Lamb, George Edwin Robert; Prevorsek, Dusan Ciril; and Oswald, Hendrikus Johan, 3,719,539.

Prior, Josef; and Siegelin, Werner, to Dynamit Nobel Aktiengesellschaft. Pressurizing-gas-producing charges containing an aminoguanidine tetrazole and an oxygen-leberating or gas-evolving additive. 3,719,604, Cl. 252-186.000.

Procter & Gamble Company, The: *See—*
Hardy, Frederick Edward; Robson, Peter; and Speakman, Peter Roscoe Hartley, 3,719,647.
Temple, Robert D., 3,719,711.

Proctor & Gamble Company, The: *See—*
Francis, Marion D., 3,719,756.

Progil: *See—*
Berthoux, Jean; Hostein, Charles; and Mugnier, Robert, 3,719,578.

Prontor-Werk Alfred Gauthier, G.m.b.H.: *See—*
Sohn, Jorg, 3,719,131.

Puckett, Ray: *See—*
Puckett, Ray; and Lambert, Sidney K. (said Lambert assor. to said), 3,719,386.

Puckett, Ray; and Lambert, Sidney K., said Lambert assor. to said Puckett, Ray. Expansible trailers. 3,719,386, Cl. 296-26.000.

Pullman Incorporated: *See—*
Carr, George W., 3,719,385.

Purdy, Henry C. Golf course. 3,719,360, Cl. 273-176.00a.

Purnhagen, Heinz: *See—*
Grada, Walter; Purnhagen, Heinz; Schnell, Gunter; and Stedtnitz, Wolfgang, 3,719,920.

Quadrini, David A.: *See—*
Lynn, Lewis G.; and Quadrini, David A., 3,719,081.

Quick, John L., to Baxter Laboratories, Inc. Method for adding medicaments to a sealed expandable parenteral fluid container. 3,719,212, Cl. 141-5.000.

Quilico, Adolfo: *See—*
Minisci, Francesco; Bertini, Franco; Galli, Remo; Pizzo, Torricella Del; and Quilico, Adolfo, 3,719,685.

Quinby, Charles E., to Lear Siegler, Inc. End plate for gyroscope rotor. 3,719,092, Cl. 74-5.000.

Rabusin, Elio, to S.A.E.S. Getters S.p.A. Getter device. 3,719,433, Cl. 417-48.000.

Raddatz, Gene R.: *See—*
Porter, David H.; and Raddatz, Gene R., 3,719,818.

Radtke, Shcrade F.; Miron, Jerry; Bhatt, Pradip; Shah, Bharat C.; and Skeist, Irving, to International Lead Zinc Research Organization, Inc. Process for producing a lead-plastic laminate and a laminate produced by the process. 3,719,551, Cl. 161-213.000.

Raiser, Walter. Automatic dish washing machine. 3,719,323, Cl. 239-264.000.

Rakestraw, Lawrence F.; and Mottern, John W., to Monsanto Company. Method for producing spherical particles having a narrow size distribution. 3,719,733, Cl. 264-9.000.

Randolph, Russell H. Building panels and channels. 3,719,016, Cl. 52-236.000.

Rasmusson, Stig Arne Rasmus; Dahlstrom, Leif Key Tommy; and Thelander, Ernst Georg, to AB Emmaboda Glasverk. Equipment for handling glass sheets and the like. 3,719,284, Cl. 211-50.000.

Ratouis, Roger: *See—*
Boissier, Jacques Robert; and Ratouis, Roger, 3,719,679.

Rauscher, Herbert; and Schoom, Werner. Pesticide and a process for its manufacture. 3,719,751, Cl. 424-27.000.

Ravagli, Armand: *See—*
Briotet, Jean Paul Francois Gilbert; and Ravagli, Armand, 3,719,047.

Rawlings, Charles S., 20% to Lee, Raymond, Organization, Inc., The. Automatic tractor-trailer coupling device. 3,719,372, Cl. 280-421.000.

Rawson, Eric Gordon, to Bell Telephone Laboratories, Incorporated. Optical transmission apparatus including radial and tangential polarizers. 3,719,415, Cl. 350-157.000.

Raychem Corporation: *See—*
Fischer, Christopher L.; and Otte, Richard F., 3,719,917.

Raytheon Company: *See—*
Monchamp, Roch R.; Weber, Marvin J.; and Bass, Michael, 3,719,901.

Redan, Joseph, to Simmonds Precision Products, Inc. Diffusion furnace loader. 3,719,291, Cl. 214-34.000.

Redding, Robert Barry; and Thirlby, David Aspin. Conveyor handrails. 3,719,265, Cl. 198-16.00r.

Redington, Rowland W.; and van Heerden, Pieter J., to General Electric Company. Method of manufacturing semiconductor camera tube targets. 3,718,955, Cl. 29-25.110.

Reetz, Theodor; and Britain, J. W., to Baychem Corporation. Flame resistant polyurethane polymers. 3,719,639, Cl. 260-75.0nq.

Regel, Erik: *See—*

Buchel, Karl Heinz; Grewe, Ferdinand; Scheinpflug, Hans; Kaspers, Helmut; and Regel, Erik, 3,719,760.
Reiback, Earl M. Backlighted projection screen. 3,719,412, Cl. 350-117.000.
Reich, Donald A.; and Stevens, Henry C., to PPG Industries, Inc. Alpha, alpha-dihalo-beta-lactones. 3,719,689, Cl. 260-343.900.
Reich, Henry E.: *See—*
Jungermann, Eric; and Reich, Henry E., 3,719,605.
Reist, Walter; and Meili, Heinz, to Ferag, Fehr & Reist AG. Apparatus for adjusting the speed of a transport band equipped with grippers to the speed of a conveyor band arranged ahead of such transport band. 3,719,267, Cl. 198-76.000.
Remiarz, Dan B., to Unipress Company, Inc., The. Pressing apparatus and method. 3,719,311, Cl. 223-73.000.
Remy, David C., to Merck & Co., Inc. 2-Phenylethynyl-benzyl-amines. 3,719,712, Cl. 260-570.900.
Renfroe, Harris B.: *See—*
Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., 3,719,709.
Resource Control, Inc.: *See—*
Lancy, Leslie E., 3,719,570.
Restarick, Clifford John: *See—*
Kelsall, Denis Fletcher; and Restarick, Clifford John, 3,719,089.
Reynolds, David J., to Buckeye Steel Castings Company. Resilient side bearing assembly. 3,719,154, Cl. 105-199.0cb.
Reynolds, Gordon S.: *See—*
Pannier, Karl A., Jr.; Reynolds, Gordon S.; and Sorenson, James L., 3,719,197.
Reyrolle Parsons Limited: *See—*
Easton, Vivian, 3,719,844.
Rheingold, Lawrence M.; Berlin, Milton; De Lalio, Louis; and Schierwagen, Alfred, to Alumet Corporation, The, mesne. Mechanochemical sheet metal blanking system. 3,719,536, Cl. 156-6.000.
Rhodes, Charles F., Jr.: *See—*
Chaney, Preston E.; and Rhodes, Charles F., Jr., 3,719,935.
Rhone-Poulenc S.A.: *See—*
Brunie, Jean Claude; Costantini, Michel; Crenne, Noel; and Jouffret, Michel, 3,719,706.
Jolles, Georges, 3,719,656.
Rhoten, Merle L.: *See—*
McMaster, Robert C.; and Rhoten, Merle L., 3,719,824.
Richardson, Albert S., Jr., to Interpace Corporation. Line post insulator with self-restoring hinge means. 3,719,770, Cl. 174-161.00r.
Richardson Company, The: *See—*
Shore, Samuel; and Muzyczko, Thaddeus M., 3,719,596.
Richardson, Daniel E. Apparatus for aseptically filling initially covered containers. 3,719,023, Cl. 53-381.00a.
Richardson, Frederick Denys, 1/3 to Metallurgie Hoboken-Overpelt and 1/3 to RST International Metals Limited. Apparatus for measuring in a continuous manner the oxygen in a molten metal. 3,719,574, Cl. 204-195.00s.
Richter, Albert P., Jr.; Bruner, James D.; and Cox, Percy T., to Texaco Inc. Up-hole signaling device. 3,719,239, Cl. 175-50.000.
Riegert, Rupert: *See—*
Drummer, Max; Michael, Wolfgang; Munch, Werner; and Riegert, Rupert, 3,719,091.
Riegler, Adolf: *See—*
Suette, Kurt; and Riegler, Adolf, 3,719,355.
Riker Laboratories, Inc., mesne: *See—*
Mendel, Arthur; and Coyne, William E., 3,719,687.
Ring, Richard: *See—*
Tesoro, Giuliana C.; and Ring, Richard, 3,719,698.
Rinke, Heinrich: *See—*
Thomas, Wilhelm; Oertel, Harald; Rinke, Heinrich; and Bahr, Ulrich, 3,719,708.
Ripley, Charles C.; and O'Neill, Gerald L., to General Electric Company. Variable flow steam circulator. 3,719,524, Cl. 417-180.000.
Rispoli, Joseph M.; and Capossela, Anthony C., Jr., to General Foods Corporation. Process for preparing a snack food product. 3,719,501, Cl. 99-83.000.
Ritsema, Riving R., to Bendix Corporation, The. Wheel speed sensors for vehicle adaptive braking systems. 3,719,841, Cl. 310-155.000.
Robert Burns: *See—*
Heusler, Karl; Robert Burns; and Ernest, Ivan, 3,719,672.
Roberts, Richard M.; and Jones, John Stephen. Electrophoretic apparatus. 3,719,580, Cl. 204-299.000.
Robertshaw Controls Company: *See—*
Morris, Louis P.; and Dykzeuh, Theodore J., 3,719,320.
Sliger, Boyd P., 3,719,085.
Robinson, Fred: *See—*
Stecklen, Robert; and Robinson, Fred, 3,719,646.
Robinson, John W.; Bookwalter, George N.; and Tuschhoff, John V., to Staley, A. E., Manufacturing Company. Starch thickener. 3,719,661, Cl. 260-233.30r.
Robison, Michael Mullen; and Finch, Neville, to Ciba-Geigy Corporation. Imidazo(4,5-b)pyridines. 3,719,683, Cl. 260-294.80f.
Robl, Robert F.; and Walker, Wayne J., to Aluminum Company of America. Magnetic field control in electrolysis cells using plates and/or bars. 3,719,577, Cl. 204-243.00m.
Robson, Peter: *See—*
Hardy, Frederick Edward; Robson, Peter; and Speakman, Peter Roscoe Hartley, 3,719,647.
Rocket Research Corporation: *See—*
Galbraith, Lyle D., 3,719,054.
Sutherland, George S.; and Emmons, Donald L., 3,719,046.
Roessing, Keith W., to Allegheny Ludlum Industries, Inc. Control for basic oxygen steelmaking furnace. 3,719,469, Cl. 75-.000.
Rogers, Howard G.: *See—*
Cieciuch, Ronald F. W.; Luhowy, Roberta R.; Meneghni, Frank A.; and Rogers, Howard G., 3,719,489.
Locatell, Louis, Jr.; Meneghini, Frank A.; and Rogers, Howard G., 3,719,488.
Rolamite, Incorporated: *See—*
Wilkes, Donald F., 3,719,097.
Roland Offsetmaschinenfabrik Faber & Schleicher AG: *See—*
Schuhmann, Siegfried; and Alix, Hans, 3,719,437.
Rolls-Royce Limited: *See—*
Dawson, Lindsay Grahame; Petrie, James Alexander; and Bracey, Kenneth Edward George, 3,719,439.
Steele, Thomas; Eccles, George Oswald; and Williamson, Douglas Herbert, 3,719,431.
Romayne Corporation: *See—*
Malaker, Stephen F., 3,719,051.
Ronson Corporation: *See—*
Dessoy, Peter Martin Robert, 3,719,447.
Rose, Edward: *See—*
Talbot, Richard C.; Rose, Edward; and Roth, Hobert A., 3,719,020.
Rose, John Brewster: *See—*
Leslie, Victor Jeffrey; and Rose, John Brewster, 3,719,714.
Rose, Samuel, to Bio-Response, Inc. Augmentation of the production of antibodies in animals and humans and the collection thereof. 3,719,182, Cl. 128-1.00r.
Rosenberg, Harry, to New Jersey Machine Corporation. Packaging machine. 3,719,021, Cl. 53-180.000.
Ross, Charles S. Perspective drafting machine. 3,718,975, Cl. 33-77.000.
Roth, Hobert A.: *See—*
Talbot, Richard C.; Rose, Edward; and Roth, Hobert A., 3,719,020.
Roth, Stephen A., to Tektronix Inc. Color television matrixing circuit. 3,719,772, Cl. 178-5.4ma.
Rothfelder, Raymond E.: *See—*
Bragg, Ralph J.; and Rothfelder, Raymond E., 3,719,513.
Rothrock, John W.; and Michelson, Stuart R., to Merck & Co., Inc. Production of polynucleotide phosphorylase. 3,719,562, Cl. 195-66.00r.
Roths, Herbert C. O. Transplanting machine. 3,719,158, Cl. 111-2.000.
Rotolo, Frank J. Golf course. 3,719,361, Cl. 273-176.0ab.
Rouse, David Michael, to Bell Telephone Laboratories, Incorporated. Memory coding technique. 3,719,815, Cl. 235-153.0am.
Roussel UCLAF: *See—*
Bucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, 3,719,691.
Roussel-UCLAF: *See—*
Girault, Pierre; and Hagemann, Guy, 3,719,764.
Rowley, James Robert: *See—*
Keck, Jerry L.; and Rowley, James Robert, 3,719,548.
RST International Metals Limited: *See—*
Richardson, Frederick Denys, 3,719,574.
Ruggeri, Joseph P., to United States of America, Navy. Bombload handling apparatus. 3,719,338, Cl. 244-137.00r.
Rule, Clinton. Pump apparatus and housing therefor. 3,719,429, Cl. 415-201.000.
Rupp, Hans-Dieter; Siggel, Erhard; Meyer, Gerhard; Worbs, Ernst-Georg; Wallrabenstein, Michael; and Schopf, Albert, to Akzona Incorporated. Polyacyloxamidrazone solutions. 3,719,681, Cl. 260-292.00n.
Rush, Clifford W.; and Schurman, Peter T., to Beaton & Corbin Manufacturing Company, The. Arcuate tubular articles of rigid plastic. 3,719,209, Cl. 138-177.000.
Russell, Arvin E. Dump body vehicle. 3,719,392, Cl. 298-5.000.
Russmann, Werner: *See—*
Efssel, Dietrich; Hiersign Heinz; Kinzler, Fritz; Russmann, Werner; and Schulz, Helmut, 3,719,060.
Ruzicka, Josef. Ultradisintegration and agglomeration of minerals such as mica, products therefrom and apparatus therefor. 3,719,329, Cl. 241-4.000.
S & S Corrugated Paper Machinery Co., Inc.: *See—*
Shields, Albert F., 3,719,357.
Saeman, Walter C., to Olin Corporation. Coarse, light sodium carbonate. 3,719,745, Cl. 423-421.000.
S.A.E.S. Getters S.p.A.: *See—*
Rabusin, Elio, 3,719,433.
Sailas, Vaino. Roll for dewatering presses of paper making machines. 3,718,959, Cl. 29-121.00h.
Saito, Muneki: *See—*
Suzukawa, Yuichi; Kono, Hisashi; Terai, Kenji; Kuribayashi, Atushi; Tamura, Yutaka; Fujii, Hiroshi; and Saito, Muneki, 3,719,029.
Sakai, Ichio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic control system for an automatic transmission. 3,719,108, Cl. 74-869.000.
Salka, Arnold I., to Chevron Research Company. Hydrocarbon stripping process. 3,719,027, Cl. 55-51.000.
Salton, Robert B.: *See—*
McClure, Glenn T.; and Salton, Robert B., 3,719,402.

Sampey, Harry R., to Pentron Industries, Inc. Predetermined speed detector for digital tachometer. 3,719,888, Cl. 324-161.000.

Sand, Leonard B., to Zeochem Corporation. Selective sorption of nonpolar molecules. 3,719,026, Cl. 55-33.000.

Sandoz-Wander, Inc.: *See—*
Galantay, Eugene E.; and Habeck, Dietmar A., 3,719,670.
Houlihan, William J.; and Nadelson, Jeffrey, 3,719,280.

Sangster, Arlon G.; Pickering, Charles B.; and McNamara, Thomas J., to Jamesbury Corporation. Tape program control. 3,719,926, Cl. 340-147.00p.

Sano, Kouhei: *See—*
Asao, Hiroshi; Hihara, Takeshi; Endo, Seiji; Furuya, Chikashi; and Sano, Kouhei, 3,719,050.

Sarett, Lewis H.; Hoff, Dale R.; and Henry, David W., to Merck & Co., Inc. Antiprotozoal compositions containing nitroimidazoles. 3,719,759, Cl. 424-273.000.

Sarnes, Reiner: *See—*
Heinze, Gerhard; and Sarnes, Reiner, 3,719,025.

Saunders, James H.: *See—*
Martin, Donald H.; Holmer, Donald A.; Durant, Dennis J.; Bryan, Roland J., Jr.; Saunders, James H.; and Black, William B., 3,719,547.

Saunders Valve Company Limited: *See—*
Jones, Gerald Cedric; and Leek, Herbert Bentley, 3,719,344.

Savage, Phillip D., to Hall Ski-Lift Company, Inc. Snow flotation apron for skimobiles. 3,719,369, Cl. 280-28.000.

S.C. Electric Company: *See—*
Harner, Robert H.; Meister, Otto; and Owen, Robert E., 3,719,912.

Schafer, Manfred, to Daimler-Benz Aktiengesellschaft. Spark plug especially for rotary piston internal combustion engines. 3,719,850, Cl. 313-118.000.

Scharle, Carl R., to Biddle, James G., Company. Resistance standard. 3,719,914, Cl. 338-61.000.

Scheffer, William J.: *See—*
Shapley, Gail C.; Wakatsuki, J.; and Scheffer, William J., 3,719,055.

Scheinpflug, Hans: *See—*
Buchel, Karl Heinz; Grewe, Ferdinand; Scheinpflug, Hans; Kaspers, Helmut; and Regel, Erik, 3,719,760.

Schenck, Carl, Maschinenfabrik GmbH: *See—*
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Schenk, Donald Edward, to General Motors Corporation. Wheel lock control modulator. 3,719,400, Cl. 303-21.00f.

Schierwagen, Alfred: *See—*
Rheingold, Lawrence M.; Berlin, Milton; De Lalio, Louis; and Schierwagen, Alfred, 3,719,536.

Schippers, Heinz; Hensen, Friedhelm; and Lenk, Erich, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Simultaneous production of plurality of filament winding packages. 3,719,442, Cl. 425-66.000.

Schleutermann, Carl W.; and Lewis, Herman L., Jr., to Arvey Corporation. Envelope-like container. 3,719,319, Cl. 229-72.000.

Schlumberger Technology Corporation: *See—*
Kerr, Wayne L., 3,719,918.
Noble, Euan, 3,719,088.

Schlutz, Charles A.; Sedivy, Stanley J.; and Memhardt, Charles R., to Baxter Laboratories, Inc. Bearing mechanism for centrifuge assembly. 3,719,406, Cl. 308-15.000.

Schmid, Franz: *See—*
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Schmidt, Alfred: *See—*
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Schmitt, Robert A.; Betts, Gary W.; Johnson, Forrest H.; and Carlson, Lloyd, to Columbia Machine, Inc. Article handling apparatus. 3,719,288, Cl. 214-16.40c.

Schmitz, Franz-Josef: *See—*
Wegerhoff, Arno; Schmitz, Franz-Josef; and Macura, Carl, 3,719,597.

Schmitz, Gunther; Weber, Hans; and Vogt, Christian, to Demag Aktiengesellschaft. Apparatus for connecting the trailing end of one metal strip to the leading end of a succeeding metal strip. 3,719,542, Cl. 156-502.000.

Schneider, Lynn E.: *See—*
Ball, Lloyd D.; Friend, Clifford K.; and Schneider, Lynn E., 3,718,988.

Schnell, Gunter: *See—*
Grada, Walter; Purnhagen, Heinz; Schnell, Gunter; and Stedtnitz, Wolfgang, 3,719,920.

Schobinger, Ulrich; Christoffel, Cla; and Berner, Kurt, to Blattmann & Co. Textile sizing composition containing highly water soluble dextrin phosphate. 3,719,617, Cl. 260-17.4st.

Schoom, Werner: *See—*
Rauscher, Herbert; and Schoom, Werner, 3,719,751.

Schopf, Albert: *See—*
Rupp, Hans-Dieter; Siggel, Erhard; Meyer, Gerhard; Worbs, Ernst-Georg; Wallrabenstein, Michael; and Schopf, Albert, 3,719,681.

Schovee, John R., 15% to Miller, Paul J. and 16 1/2% to Boston, Thomas R. Overshoe. 3,718,993, Cl. 36-2.50y.

Schroder, Rolf: *See—*
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Schroeder, Roger L., to Bryant Grinder Corporation. Apparatus for controlling machine functions. 3,719,931, Cl. 340-172.500.

Schroter, Hans O. Variable ratio operating lever. 3,719,106, Cl. 74-518.000.

Schuhmann, Siegfried; and Alix, Hans, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Piston pump for delivering viscous pastes. 3,719,437, Cl. 417-360.000.

Schuler, L., Messrs., GmbH: *See—*
Drummer, Max; Michael, Wolfgang; Munch, Werner; and Riegert, Rupert, 3,719,091.

Schultz, Robert D.; and Di Martino, John, to Peck & Hale, Inc. Turnbuckle. 3,719,377, Cl. 287-60.000.

Schulz, Helmut: *See—*
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Schumacher, Friedrich, to Fried Krupp Gesellschaft mit beschrankter Haftung. Hydraulically dampened car bogie. 3,719,153, Cl. 105-182.00r.

Schumacher, Ignatius: *See—*
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Schurman, Peter T.: *See—*
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Schuster, Herbert; Nutzel, Karl; Dinges, Karl; and Ott, Karl-Heinz, to Bayer Aktiengesellschaft. High-impact moulding compositions and process for preparing same. 3,719,731, Cl. 260-878.00r.

Schutze, Hans Jurgen; and Hennings, Klaus, to Telefunken Patentverwertungsgesellschaft m.b.H. Method for producing microstructures. 3,719,487, Cl. 96-27.00r.

Schwartz, Harlan A., to Schwartz Manufacturing Company. Universal coffee filter. 3,719,282, Cl. 210-477.000.

Schwartz, Howard S. Method for detecting blockage or insufficiency of pancreatic exocrine function. 3,719,183, Cl. 128-2.00r.

Schwartz Manufacturing Company: *See—*
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Schwarzkopf Development Corporation: *See—*
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Schwerdtel, Wulf: *See—*
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Sconce, James S.: *See—*
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Scott, Blanton, Jr. Photographic film magazine combined with a coded multipurpose film strip and focusing screen. 3,719,130, Cl. 95-44.00r.

Scott, William B.: *See—*
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Searl, Stacy F. Non-girth saddle assembly. 3,719,024, Cl. 54-44.000.

Secretary of State for Defence: *See—*
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Secretary of State for Defence, mesne: *See—*
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Sedlatschek, Karl; Machenschalk, Rudolf A.; and Natter, Bernd, to Schwarzkopf Development Corporation. Tungsten alloy X-ray target. 3,719,854, Cl. 313-330.000.

Segawa, Masahiro; and Kawakami, Yukichika, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for improving crystallinity of vinylidene fluoride polymers. 3,719,644, Cl. 260-87.700.

Segerson, Eugene E., to Motorola, Inc. Plastic encapsulated semiconductor assemblies. 3,718,969, Cl. 29-588.000.

Seitz-Asbest-Werke Theo & Geo Seitz: *See—*
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Seitz-Leigel, Gunther, to Seitz-Asbest-Werke Theo & Geo Seitz. Mounting for prefabricated, large surface, individual filtering layers in horizontal layer filters, having large dimensioned filter elements. 3,719,279, Cl. 210-231.000.

Sekimoto, Yashuhiro; and Korenaga, Itsuo, to Hitachi Metals, Ltd. Built-up sleeve roll for rolling and method of making the same. 3,718,956, Cl. 29-132.000.

Serebryakov, Nikolai Gennadievich; Dedenkov, Anatoly Nikolaevich; and Kiryakov, Mikhail Akimovich, to Institut Meditsinskoi Radiologii Amn SSSR. Radioactive preparation absorbable in organism and method of obtaining same. 3,719,750, Cl. 424-1.000.

Serrano, Francisco M., to Compagnie Francaise des Petroles. Sealing construction between two juxtaposed elements. 3,719,374, Cl. 285-97.000.

Servasier, Alfred, to Societe Nationale des Petroles d'Aquitaine. Manufacture of sulfur. 3,719,744, Cl. 423-574.000.

Service d'Exploitation Industrielle des Tabacs et des Allumettes: *See—*
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Seumel, Karl-Gottfried: *See—*
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Shah, Bharat C.: *See—*
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Shaklee, Kerry Lee: *See—*
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Shang, Jer-Yu, to Sun Oil Company. Laser controlled chemical reactor. 3,719,454, Cl. 23-252.00r.
Shank, Wayne C., to Avco Corporation. Method of securing a threaded element in a high centrifugal force field. 3,718,957, Cl. 29-156.80c.
Shapiro, Jonathan S.; Verses, Christ J.; and Karlson, Eskil L., to Pollution Control Industries Inc. Sterilizing and packaging device. 3,719,017, Cl. 53-21.0fc.
Shapley, Gail C.; Wakatsuki, J.; and Scheffer, William J., to Frick Company. Continuous belt freezer having removable compartments. 3,719,055, Cl. 62-63.000.
Sharp Corporation: *See—*
Takayama, Katuki; Nishida, Koji; and Yamazaki, Hayao, 3,719,398.
Sharp, Paul H., to Columbia Broadcasting Systems, Inc. Audio responsive intensity modulator fluorescent and like lamps. 3,719,857, Cl. 315-156.000.
Shaub, Harold: *See—*
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Shaw, Clarence W.; and Smith, George R., said Smith assor. to Durant, Donald W. Corrosion preventing apparatus and method. 3,719,049, Cl. 61-54.000.
Sheldon, Edward Enamuel. Radio-isotope cameras using vacuum tubes with fiberoptic endwalls and luminiscent means of fiberoptic construction. 3,719,823, Cl. 250-71.50s.
Shell Oil Company: *See—*
May, Clayton A., 3,719,626.
McClure, James D.; and Conklin, George W., 3,719,699.
Simon, Maurice M.; and Arons, Jakob de Swaan, 3,719,743.
Shen, Chung Yu: *See—*
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Sherman, Paul L. Re-useable diaper. 3,719,189, Cl. 128-287.000.
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Shetty, Bola Vithal: *See—*
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Shetty, Bola Vithal, to Penwalt Corporation. Amino (or amido)-phenyl-alkyl-benzazepine analgesics and narcotic antagonists. 3,719,669, Cl. 260-239.0bb.
Shevlin, Thomas S.: *See—*
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Shibata, Takanori; Kasama, Ryoji; Naito, Shotaro; and Maki, Shin, to Nissan Motor Co., Ltd. and Hitachi, Ltd. Device for charging storage battery. 3,719,881, Cl. 320-62.000.
Shields, Albert F., to S & S Corrugated Paper Machinery Co., Inc. Automatic power feeder. 3,719,357, Cl. 271-12.000.
Shih, Ten Fuh: *See—*
Chen, David T. Y.; and Shih, Ten Fuh, 3,719,496.
Shimizu, Chiaki: *See—*
Ohono, Tadao; Shimizu, Chiaki; and Iwatani, Junichi, 3,719,455.
Shimizu, Tetsuji; Hibino, Sohei; Miwa, Haruo; and Inagaki, Nobukatsu, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Device for detecting the rotation of wheels. 3,719,887, Cl. 324-171.000.
Shinoda, Kazuo; and Endo, Kunio, to Toyota Jidosha Kogyo Kabushiki Kaisha and Nippondenso Kabushiki Kaisha. Electric fuel injection control system for internal combustion engines. 3,719,176, Cl. 123-32.0ea.
Shionogi & Co., Ltd.: *See—*
Ohono, Tadao; Shimizu, Chiaki; and Iwatani, Junichi, 3,719,455.
Shipley Company Inc.: *See—*
Gulla, Michael; and Dutkewych, Oleh Borys, 3,719,508.
Shiraishi, Tadashi, to Matsushita Electric Industrial Co., Ltd. P-N junction device and a method of making the same. 3,719,861, Cl. 317-234.00r.
Shivers, William E. Cattle guards. 3,719,004, Cl. 49-131.000.
Shore, Samuel; and Muzyczko, Thaddeus M., to Richardson Company, The. Preparation of alkaline-earth alkylbenzene sulfonates. 3,719,596, Cl. 252-1.000.
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Sieckhaus, John F.: *See—*
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Siegelin, Werner: *See—*
Prior, Josef; and Siegelin, Werner, 3,719,604.
Siegmund, Frederik Willem, to N. V. Nederlandse Kraanbouw Mij. Hoisting apparatus, more particularly for use in a furnace. 3,719,300, Cl. 214-658.000.
Siemens Aktiengesellschaft: *See—*
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Siggel, Erhard: *See—*
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Sigmund, Gerhard: *See—*
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Simmons, Bjorn Herman Olof; and Karsberg, Lars Anders Birger, to Aktiebolaget Bofors. Device for a projectile. 3,719,339, Cl. 244-3.270.
Simmons, Roger R. Shiftable light mask for camera lens. 3,719,128, Cl. 95-36.000.
Simon, Abraham: *See—*
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Simon, Henry, Limited: *See—*
Allen, Robert William; and Drane, John, 3,719,276.
Simon, Maurice M.; and Arons, Jakob de Swaan, to Shell Oil Company. Magnesium chloride dehydration. 3,719,743, Cl. 423-498.000.
Simon-Carves, Limited: *See—*
Burgess, Charles David, 3,719,354.
Simonetti, Guido F.: *See—*
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Sims, S. Donald; and Forestieri, Raymond W., to United States of America, Atomic Energy Commission. Method for connecting a wire to a component. 3,718,968, Cl. 29-482.000.
Sindelar, William E., to Danly Machine Corporation. Use of metal working press for plastic compression molding. 3,719,445, Cl. 425-150.000.
Singer Company, The, mesne: *See—*
Carver, Fred F., 3,718,987.
McCoy, Reginald F. H.; and Woycechowsky, Brian J., 3,719,817.
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Skjoldborg, Finn. Toy building set. 3,719,003, Cl. 46-25.000.
Slater, Robert W.; and Barker, Joseph B., III. Dental system. 3,718,973, Cl. 32-22.000.
Sletten, Carlyle J.; Goggins, William B., Jr.; and Blacksmith, Philipp, to United States of America, Air Force. Non-integral radar phase comparison system for object recognition. 3,719,945, Cl. 343-55.00a.
Sletten, Carlyle J.; Goggins, William B.; and Blacksmith, Philipp, to United States of America, Air Force. Radar phase comparison system including a superhetrodyne receiver. 3,719,946, Cl. 343-55.00a.
Sliger, Boyd P., to Robertshaw Controls Company. Thermal power element. 3,719,085, Cl. 73-368.300.
Small, Jeff H. Closable shade cowl provided curtain hanger brackets. 3,719,220, Cl. 160-108.000.
Smith, Calvin S.; and McLeod, William J., to Chevron Research Company. Hydrogen production. 3,719,749, Cl. 423-650.000.
Smith, George R.: *See—*
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Smith, R. P., Company: *See—*
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Smith, Robert P., to Smith, R. P., Company. Double lens goggle and method of manufacture. 3,718,937, Cl. 2-14.00n.
Smith, Roger, Jr.; and Turner, John Wirt, Jr., to Jackson, Byron, Inc. Plurally energized power tongs. 3,719,236, Cl. 173-12.000.
Smith, Walter F.: *See—*
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Snajdr, Edward A., to United States of America, Atomic Energy Commission. Method of monitoring a neutron flux with a ceramic neutron flux monitor. 3,719,825, Cl. 250-83.100.
Snider, Philip A., to Dotco, Inc. Lubricated angle drive attachment for air operated tool. 3,719,254, Cl. 184-64.000.
Snider, Philip A., to Dotco, Inc. Air operated tool. 3,719,440, Cl. 418-266.000.
Snyder, Harold J., Jr.; and Guenther, Ralph W., to United States of America, Atomic Energy Commission. Nuclear fuel debris retention structure. 3,719,556, Cl. 176-38.000.
Societa Italiana Telecommunicazioni Siemens S.p.A.: *See—*
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Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique "Alcatel": *See—*
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Societe Anonyme dite; Societe Industrielle Pour la Fabrication des Antibiotiques (S.I.F.A.): *See—*
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Societe d'Etudes de Produits Chimiques: *See—*
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Societe Financiere et Industrielle des Ateliers et Chantiers de Bretagne: *See—*
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Societe Nationale des Petroles d'Aquitaine: *See—*
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Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*

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Soderstrom, Sten Hilding; and Cardell, Olof. Machine for manufacturing helical fin tubes. 3,718,960, Cl. 29-157.3ah.
Sohn, Jorg, to Prontor-Werk Alfred Gauthier, G.m.b.H. Photographic shutter with electronic timing device. 3,719,131, Cl. 95-53.00e.
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Southland, John Robert, to Omark Industries, Inc. End mill grinder. 3,719,459, Cl. 51-96.000.
Spaak, Albert; and Weir, Clifford L. Apparatus for molding articles. 3,719,441, Cl. 425-4.000.
Speakman, Peter Roscoe Hartley: *See—*
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Holland, Eugene E.; and Jones, Rex O., III., 3,719,875.
Weaver, William P., 3,719,800.
Spier, I. Martin, to Calzaturificio Tecnica dei F LLI Zanatta S.N.C. Ski boot construction and method. 3,718,994, Cl. 36-2.5al.
Sprague, Richard L.; and Dennis, David S., to General Motors Corporation. Electronic shift control for a transmission. 3,719,096, Cl. 74-752.00d.
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Staffa, Alois; and Huebner, Erwin, to Siemens Aktiengesellschaft. Multiple cathode. 3,719,855, Cl. 313-338.000.
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Stecklen, Robert; and Robinson, Fred, to Alcolac Chemical Corporation. Method of preparing aqueous emulsion polymers from monomers containing an aziridine ring. 3,719,646, Cl. 260-80.720.
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Sterling Laboratories; division of Sterling Scientific Industries: *See—*
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Stevens, Milton J. Method of constructing a ferrule unit for fishing rods. 3,718,967, Cl. 29-458.000.
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Steward, Robert L., to Hewlett-Packard Company. Solid state displays. 3,719,849, Cl. 313-109.500.
Stewart, William Findlay, to Perkins Engines Limited. Internal combustion engine. 3,719,178, Cl. 123-195.00a.
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Stone, James N., to Continental Can Company, Inc. Process for preparing metal salts of tall oil. 3,719,654, Cl. 260-97.500.
Straub, Richard K. Drift pin alignment clamp. 3,719,119, Cl. 85-70.000.
Streander, George W., to Design Systems, Inc. Laminated gear construction. 3,719,103, Cl. 74-445.000.
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Sturge, Derek William James; and Meaden, Geoffrey William, to United Kingdom Atomic Energy Authority. Two stage coating process for nuclear fuel particles. 3,719,516, Cl. 117-16.000.
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Sugano, Keiichi; and Yuge, Yooji, to Tokyo Shibaura Electric Co., Ltd. Halogen lamps containing methyl bromide or methylene chloride. 3,719,853, Cl. 313-222.000.
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Takayama, Katuki; Nishida, Koji; and Yamazaki, Hayao, to Aisin Seiki Kabushiki Kaisha and Sharp Corporation. Anti-skid brake control. 3,719,398, Cl. 303-21.00a.
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Valyi, Emery I. Method for molding plastic containers. 3,719,735, Cl. 264-89.000.

Van de Walker, Roger D.; and Howe, Blair E., to California Injection Molding Co., Inc. Method and apparatus for molding articles containing inserts. 3,719,396, Cl. 302-2.00r.

Van Der Puije, Patrick David, to Northern Electric Company, Limited. Automatic gain control circuit. 3,719,895, Cl. 330-29.000.

Van derschueren, Emile, to European Atomic Energy Community. Process and device for the fabrication of alloy. 3,719,470, Cl. 75-65.000.

Van Dyke, John; and Lamfers, Bernard, to Allen, R. C., Inc. A.C. power supply for rate gyro. 3,719,874, Cl. 318-227.000.

van Heerden, Pieter J.: *See—*
Redington, Rowland W.; and van Heerden, Pieter J., 3,718,955.

Van Koevering, Barry D.; Blough, William M., Jr.; Bunnell, Fred H.; McDowell, William B.; and McDowell, George E. Pipeline survey vehicle. 3,718,978, Cl. 33-174.001.

Van Linden, Jacques: *See—*
Fontein, Freerk J.; Ploeg, Martinus; and Van Linden, Jacques, 3,719,204.

Vanderberg, Lawrence J.; and Wenzel, John L., to Ford Motor Company. Speed indicating system for an automotive vehicle. 3,719,886, Cl. 324-167.000.

Varga, John Maximilian Jules, to Carding Specialists (Canada) Limited. Control means and a method of controlling thereby. 3,719,122, Cl. 91-37.000.

Velsicol Chemical Corporation: *See—*
Boppart, Eugene A., 3,719,301.

Venter, Tjaart Petrus. Relating to adjustable stays. 3,719,381, Cl. 292-275.000.

Vepa AG: *See—*
Fleissner, Heinz, 3,719,062.

Verdol S.A.: *See—*
Frappe, Pierre, 3,719,803.

Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft: *See—*
Suette, Kurt; and Riegler, Adolf, 3,719,355.

Vernay Laboratories, Inc.: *See—*
Gifford, Robert T., 3,719,322.

Vernon, Lonnie W.; and Pennington, Robert E., to Esso Research and Engineering Company. Hydrotreating of hydrocarbonaceous liquids with carbon monoxide-containing treat gas. 3,719,588, Cl. 208-209.00r.

Versar, Inc.: *See—*
Vaill, Jack Roy, 3,719,829.

Verses, Christ J.: *See—*
Shapiro, Jonathan S.; Verses, Christ J.; and Karlson, Eskil L., 3,719,017.

Vessey, Clifford A.; Gibson, Geoffrey M.; and Holker, Kenneth U., to Associated Chemical Companies Limited. Anti-corrosive coating compositions. 3,719,534, Cl. 148-6.200.

Vetco-Offshore Industries, Inc.: *See—*
Hanes, James W. E., 3,719,070.

Vezeau, Roland, 48% to Smith, Paul and Morel, Joseph Julien. Skate sharpening machine. 3,719,006, Cl. 51-34.00a.

Vibrionics Research Co.: *See—*
Stanish, Robert B., 3,718,970.

Viessmann, Hans. Heat exchanging apparatus. 3,719,173, Cl. 122-149.000.

Vilter Manufacturing Corporation: *See—*
Grant, Whitney I., 3,719,057.

Vincelette, Charles James, to Bell Telephone Laboratories, Incorporated. Array of focusing holograms. 3,719,409, Cl. 350-3.500.

Vinch, Angelo N., to Westinghouse Electric Corporation. Electronic control for machine tools and the like. 3,719,925, Cl. 340-147.00p.

Vischulis, George. Web trimmer control. 3,719,114, Cl. 83-74.000.

Viviano, Thomas. Adjustable spreader and leveler for dump trailer. 3,719,393, Cl. 298-35.00m.

Vogel, Hans-Ludwig: *See—*
Teichert, Peter; and Vogel, Hans-Ludwig, 3,719,688.

Vogt, Christian: *See—*
Schmitz, Gunther; Weber, Hans; and Vogt, Christian, 3,719,542.

Vogt, Herwart C.; and Lajiness, Wayne G., to BASF Wyandotte Corporation. Process for preparing polyurethanes in an isocyanate-reactive solvent solution. 3,719,621, Cl. 260-30.40n.

Voigtlaender, Herbert, to Schenck, Carl, Maschinenfabrik GmbH. Discharge head for a bin, especially a bulk metering bin. 3,719,290, Cl. 214-17.00d.

Von Reichenbach, Fernando, to Instituto Torcuato di Tella. Process and apparatus for converting image elements to electric impulses. 3,719,777, Cl. 178-6.800.

Voyce, Guy. Identification devices. 3,718,999, Cl. 40-309.000.

Vyskumny ustav Mechanizacie a Automatizacie Nove: *See—*
Cerva, Alexander; and Tomasovic, Milan, 3,719,325.

Waaben, Sigurd Gunther, to Bell Telephone Laboratories, Incorporated. Time division multiplexer using charge storage diode line circuits. 3,719,832, Cl. 307-243.000.

Wacker-Chemitronic, Gesellschaft fur Elektronik Grundstoffe m.b.H.: *See—*
Authier, Bernhard; Deckert, Helmut; Hofbauer, Werner; and Bauer, Rudolf, 3,719,271.

Wade, Ricardo H.: *See—*
Arthur, Jett C., Jr.; Singh, Sujan; and Wade, Ricardo H., 3,719,449.

Waiss, Anthony C., Jr.; Kuhnle, Judith A.; and Wiley, Mabry Eileen, to United States of America, Agriculture. Removal of mercury from water using nut wastes. 3,719,473, Cl. 75-121.000.

Wakabayashi, Takashi; Kinugasa, Terukazu; Hozumi, Shiro; and Sugihara, Kanji, to Matsushita Electric Industrial Co., Ltd. Memory device having lead dioxide particles therein. 3,719,933, Cl. 340-173.0tp.

Wakatsuki, J.: *See—*
Shapley, Gail C.; Wakatsuki, J.; and Scheffer, William J., 3,719,055.

Walker, John Q., to McDonnell Douglas Corporation. Means for separating organics containing from one to twenty carbons comprising series connected packed and capillary columns. 3,719,084, Cl. 73-23.100.

Walker, Wayne J.: *See—*
Robl, Robert F.; and Walker, Wayne J., 3,719,577.

Wallrabenstein, Michael: *See—*
Rupp, Hans-Dieter; Siggel, Erhard; Meyer, Gerhard; Worbs, Ernst-Georg; Wallrabenstein, Michael; and Schopf, Albert, 3,719,681.

Walmsley, Martin Francis; and Cross, John Valentene, to Labatt, John, Limited. Preparation of a brewers' wart. 3,719,500, Cl. 99-52.000.

Warezak, Ronald J. Universal tool for holding the eyes of leaf springs. 3,718,964, Cl. 29-200.00p.

Warwick Electronics Inc.: *See—*
Vail, Thomas W., 3,719,334.
Windsor, George C. P., 3,719,378.

Wasp, Edward J., to Bechtef International Corporation. Conveying a coal slurry with a single pipeline. 3,719,397, Cl. 302-66.000.

Watanabe, Hikaru: *See—*
Murakami, Yoichi; and Watanabe, Hikaru, 3,719,725.

Waterman, Glenn Noble, to Edo Western Corporation. Pulse doppler and navigation system. 3,719,923, Cl. 340-3.00d.

Watermann, Hans Dieter, to Arn. Kiekert Sohne. Motor-vehicle door latch with pivotal latching fork. 3,719,380, Cl. 292-216.000.

Watts, Max W.: *See—*
Lunsford, Waymond S.; Watts, Max W.; and Mason, Kenneth W., 3,718,946.

Waygood, James J., to Cummins Engine Company, Inc. Vehicle air conditioning apparatus. 3,719,058, Cl. 62-200.000.

Weaver, William P., to Sperry Rand Corporation. Integrator compensator for improving accuracy. 3,719,800, Cl. 235-61.00c.

Webb, Jervis B., Company: *See—*
Grace, Robert W., 3,719,295.

Weber Dental Company, The: *See—*
Buchtel, Dean H.; Lappin, Kenneth R.; and Maurer, John A., 3,718,974.

Weber Dental Manufacturing Company, The: *See—*
Buchtel, Dean H.; Lappin, Kenneth R.; and Maurer, John A., 3,719,308.

Weber, Hans: *See—*
Schmitz, Gunther; Weber, Hans; and Vogt, Christian, 3,719,542.

Weber, Marvin J.: *See—*
Monchamp, Roch R.; Weber, Marvin J.; and Bass, Michael, 3,719,901.

Weber, Neill: *See—*
Dzieciuch, Matthew A.; and Weber, Neill, 3,719,531.

Webster, Harold F., to General Electric Company. Liquid cooled X-ray tube anode. 3,719,847, Cl. 313-60.000.

Wegerhoff, Arno; Schmitz, Franz-Josef; and Macura, Carl, to Akzona Incorporated. Acyl-amino-propyl-dialkylammonium dialkyl phosphates as textile finishing agents. 3,719,597, Cl. 252-8.800.

Wegner, John, to Edanbob Corporation. Line guide device. 3,719,161, Cl. 116-119.000.

Weir, Clifford L.: *See—*
Spaak, Albert; and Weir, Clifford L., 3,719,441.

Weischedel, Richard C., to General Electric Company. Radiant energy sensor. 3,719,424, Cl. 356-141.000.

Welch, James Ernest: *See—*
Eastcott, Peter de Hertel; and Welch, James Ernest, 3,719,099.

Weller, Erwin: *See—*
Worner, Otto; Brugger, Franz; and Weller, Erwin, 3,719,916.

Wellman-Lord, Inc.: *See—*
Terrana, Jack D.; and Miller, Leo A., 3,719,742.

Wells, Herbert Arthur, to Bell Telephone Laboratories, Incorporated. Cable-handling machine. 3,719,348, Cl. 254-134.3sc.

Wells, Ross Nelson Frederick: *See—*
Campbell, Norman Bernard; and Wells, Ross Nelson Frederick, 3,719,641.

Wenk, Jurgen: *See—*
Ott, Hanns; Wenk, Jurgen; and Latussek, Hans-Peter, 3,719,865.

Wentz, John L., to Westinghouse Electric Corporation. Polarization independent light modulation means using birefringent crystals. 3,719,414, Cl. 350-150.000.

Wenzel, John L.: *See—*
Vanderberg, Lawrence J.; and Wenzel, John L., 3,719,886.
Werra, Bruno H., to Ladish Co. Fluid pressure actuated diaphragm valve. 3,719,343, Cl. 251-61.100.
Western Electric Company, Incorporated: *See—*
Fuchs, Francis Joseph, Jr., 3,719,065.
Westinghouse Air Brake Company: *See—*
McClure, Glenn T.; and Salton, Robert B., 3,719,402.
Westinghouse Electric Corporation: *See—*
Billingsley, Raymond L.; Howard, Ralph L.; and Noreen, Donald H., 3,719,287.
Geil, Fred G.; and Dunsworth, William K., 3,719,939.
Golaski, Frank W., 3,719,910.
Green, Martin, 3,719,778.
Hanft, Herbert, 3,719,909.
Mayers, Joseph B.; and Kmonk, Stanley, 3,719,560.
Munson, William A., 3,719,811.
Vinch, Angelo N., 3,719,925.
Wentz, John L., 3,719,414.
Wettre, Gunnir, to International Standard Electric Corporation. Safety valve for oil filled cable. 3,719,203, Cl. 137-554.000.
Weyerhaeuser Company: *See—*
Freeman, Harlan G., 3,719,724.
Wheeling Stamping Company: *See—*
Cleevely, Bruce T., 3,719,446.
White, Gerald W. Vacuum system cold trap. 3,719,052, Cl. 62-3.000.
Whitney, W. A., Corporation: *See—*
Mauk, Robert W.; and Scott, William B., 3,719,117.
Wieking, Jens: *See—*
Kuhl, Walter Karl; and Wieking, Jens, 3,719,905.
Wiggins, E. B., Inc.: *See—*
Anderson, Dean M.; and Burbick, Ross E., 3,719,194.
Wilcox, James E.: *See—*
Gladstone, James E.; Wilcox, James E.; and Hawthorn, John, 3,719,517.
Wilcox, Roger L. Process of making pile fabric floor covering. 3,719,537, Cl. 156-72.000.
Wiley, Mabry Eileen: *See—*
Waiss, Anthony C., Jr.; Kuhnle, Judith A.; and Wiley, Mabry Eileen, 3,719,473.
Wilfert, Karl, to Daimler-Benz Aktiengesellschaft. Vehicle structure. 3,719,245, Cl. 180-90.000.
Wilhelm, Arthur L.; Wilhelm, Leonard M.; and Wilhelm, Lawrence L. Pressure indicator for pneumatic tire. 3,719,198, Cl. 137-228.000.
Wilhelm, Lawrence L.: *See—*
Wilhelm, Arthur L.; Wilhelm, Leonard M.; and Wilhelm, Lawrence L., 3,719,198.
Wilhelm, Leonard M.: *See—*
Wilhelm, Arthur L.; Wilhelm, Leonard M.; and Wilhelm, Lawrence L., 3,719,198.
Wilkes, Donald F., to Rolamite, Incorporated. Mechanical apparatus. 3,719,097, Cl. 74-100.000.
Williams, David R., 20% to Lee, Raymond, Organization, Inc., The. Workwatch. 3,719,037, Cl. 58-74.000.
Williamson, Clifford: *See—*
Charcharos, Anthreas Nicholas; and Williamson, Clifford, 3,719,172.
Williamson, Douglas Herbert: *See—*
Steele, Thomas; Eccles, George Oswald; and Williamson, Douglas Herbert, 3,719,431.
Wilson, Kenneth A., to American Chain & Cable Company, Inc. High speed frequency shift keyed transmission system. 3,719,779, Cl. 178-66.00r.
Wilson, Raymond F.: *See—*
Herbstman, Sheldon; Peck, Reese A.; Guptill, Frank E., Jr.; and Wilson, Raymond F., 3,719,589.
Wilton, Donald P.: *See—*
Cline, Richard F.; and Wilton, Donald P., 3,719,763.
Windmoller & Holscher: *See—*
Upmeier, Hartmut, 3,719,351.
Windsor, George C. P., to Warwick Electronics Inc. Pull-proof control knob. 3,719,378, Cl. 287-53.00h.
Winkler, Josef: *See—*
Falkenberg, Dieter; and Winkler, Josef, 3,719,532.
Winstead, Jordan D.; and Barnes, Robert B. Engine block stand. 3,719,356, Cl. 269-48.000.
Woernle, Peter: *See—*
Grude, Fritz; Halcour, Kurt; Schwerdtel, Wulf; Swodenk, Wolfgang; and Woernle, Peter, 3,719,718.
Wojtowicz, John A.; and Lapkin, Milton, to Olin Corporation. Method for the preparation of biodegradable glycidol surfactants. 3,719,636, Cl. 260-6.50b.
Wolff, Willi: *See—*
Jennes, Gert; Huther, Edmund; and Wolff, Willi, 3,719,649.
Wolgast, Raymond P.: *See—*
Wolgast, Raymond P.; and Hall, Bertie Forrest, Jr. (said Hall assor. to said), 3,719,347.
Wolgast, Raymond P.; and Hall, Bertie Forrest, Jr., said Hall assor. to said Wolgast, Raymond P. Vacuum anchored pulling device. 3,719,347, Cl. 254-124.000.
Woodruff, George M., to General Foods Corporation. Method of producing perforated plastic film. 3,719,736, Cl. 264-156.000.
Woods, David, to J.G. Furniture Company, Inc. Desk configuration having stationery organizer. 3,719,407, Cl. 312-197.000.
Worbs, Ernst-Georg: *See—*
Rupp, Hans-Dieter; Siggel, Erhard; Meyer, Gerhard; Worbs, Ernst-Georg; Wallrabenstein, Michael; and Schopf, Albert, 3,719,681.
Worner, Otto; Brugger, Franz; and Weller, Erwin, to Daimler-Benz Aktiengesellschaft. Slip-ring arrangement especially for brake slippage control installations of motor vehicles. 3,719,916, Cl. 339-3.00r.
Woycechowsky, Brian J.: *See—*
McCoy, Reginald F. H.; and Woycechowsky, Brian J., 3,719,817.
Wright, Sam W., to Firestone Tire & Rubber Company, The. Process of making foam rubber, and the foam rubber thus produced. 3,719,614, Cl. 260-2.501.
Wu, Yao Hua; and Lobeck, Walter G., Jr., to Johnson, Mead & Company. 10-Imidoylphenothiazines. 3,719,671, Cl. 260-243.00a.
Xerox Corporation: *See—*
Bean, Lloyd F., 3,719,483.
Cade, Ronald L.; and Knapp, John F., 3,719,169.
Egnaczak, Raymond K., 3,719,484.
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Kingsley, William; and Allis, Robert F., 3,719,951.
Korn, Homer; Greenfield, Stephen J.; and Stemmle, Denis J., 3,719,266.
Makino, Katsuo; Oshikawa, Akira; and Nagashima, Toshio, 3,719,481.
Yamamoto, Masahiro; and Iida, Takeo, to Minolta Camera Kabushiki Kaisha. Mechanism for delivering recorded sheet film selected in indexing device to reproduction position. 3,719,274, Cl. 209-80.500.
Yamazaki, Hayao: *See—*
Takayama, Katuki; Nishida, Koji; and Yamazaki, Hayao, 3,719,398.
Yamazaki, Seishi; and Kaneda, Masao, to Hitachi, Ltd. Transistor radio receiver employing an improved squelch circuit. 3,719,892, Cl. 325-402.000.
Yanushkevich, Igor Lvovich: *See—*
Bukhman, Aron Borukhovich; Drovenkov, Evgeny Alexandrovich; Ivaschenko, Felix Alexandrovich; Aizenshtein, Aron Meerovich; and Yanushkevich, Igor Lvovich, 3,719,950.
Yarmark, Martin J., to Triboro Electric Corporation. Socket mounts for lighting fixtures. 3,719,820, Cl. 240-81.00r.
Yoshida, Hiroshi: *See—*
Oishi, Kazuo; Yoshida, Hiroshi; Ando, Noriyoshi; and Kurebayashi, Tokuhiro, 3,719,177.
Yoshida, Masaru; Nakase, Yoshiaki; and Ito, Akihiko, to Japan Atomic Energy Research Institute. Process for polymerizing tetraoxane. 3,719,637, Cl. 260-67.0fp.
Yoshioka, Yoshio: *See—*
Imai, Kin-Ichi; Yoshioka, Yoshio; Toda, Jun; and Aoki, Hisashi, 3,719,660.
Yoshitake, Toshihiko: *See—*
Hara, Kazuo; and Yoshitake, Toshihiko, 3,719,726.
Young, James W.; Cason, George A.; and Kunkel, Ernest O., to Dresser Industries, Inc. Earth boring machine. 3,719,240, Cl. 175-207.000.
Youngblood, John B.: *See—*
Dickey, James W.; and Youngblood, John B., 3,719,941.
Yudelson, Joseph S.; and Gysling, Henry J., to Eastman Kodak Company. Photosensitive element containing a photoreducible palladium compound and the use thereof in physical development. 3,719,490, Cl. 96-48.000.
Yuge, Yooji: *See—*
Sugano, Keiichi; and Yuge, Yooji, 3,719,853.
Zahka, Joseph G.: *See—*
Daniels, Ruthven H.; and Zahka, Joseph G., 3,719,936.
Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See—*
Leber, Fritz; Seumel, Karl-Gottfried; and Mohrle, Gunther, 3,719,102.
Zenith Radio Corporation: *See—*
Adler, Robert, 3,719,907.
Zenner, Walter J.: *See—*
Fulton, John R.; and Zenner, Walter J., 3,719,781.
Zenses, Carl. Rasp and method for its manufacture. 3,719,109, Cl. 76-101.00a.
Zeochem Corporation: *See—*
Sand, Leonard B., 3,719,026.
Zielczynski, Mieczyslaw. Personnel ionization dosimeters especially for radiation of unknown composition. 3,719,826, Cl. 250-83.3pd.
Zimmerly, Robert D., to Ladish Co. Cleaning system. 3,719,191, Cl. 134-102.000.
Zito Company Inc., The: *See—*
Zito, Ralph, Jr., 3,719,526.
Zito, Ralph, Jr., to Zito Company Inc., The. Rechargeable metal halide battery. 3,719,526, Cl. 136-6.000.
Zoecon Corporation: *See—*
Henrick, Clive A.; Siddall, John B.; and Anderson, Richard J., 3,719,666.
Zoroglu, Demir S., to Motorola, Inc. Hyperfine geometry devices and method for their fabrication. 3,719,535, Cl. 148-187.000.
Zuber, Bretislav Paul, to Northern Electric Company Limited. Tape aligning device. 3,719,315, Cl. 226-19.000.
Zweig, Arnold, to American Cyanamid Company. Photodecomposition of dihydro-aromatic and similar anhydrides. 3,719,571, Cl. 204-158.00r.
03/06/73; Grasselli, Robert K.; and Callahan, James L., to Standard Oil Company, The. Fuel cell containing an electrolyte consisting of an aqueous solution of arsenic acid. 3,719,528, Cl. 136-86.00r.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF MARCH, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Clark Equipment Co.: *See*—
Gondeck, Frederick V., Hickox, Kennedy, Perez, and Thompson. Re. 27,593.

Gondeck, Frederick V., L. E. Hickox, T. E. Kennedy, A. Perez, and J. F. Thompson, to Clark Equipment Co. Foamed core laminated structure and method. Re. 27,593, 3–6–73, Cl. 161—44.

Hickox, Lester E.: *See*—
Gondeck, Frederick V., Hickox, Kennedy, Perez, and Thompson. Re. 27,593.

Honeywell Inc.: *See*—
Hurd, Edward T. E., III. Re. 27,596.

Hurd, Edward T. E., III, to Honeywell Inc. Two-wire MV/V transmitter. Re. 27,596, 3–6–73, Cl. 340—210.

Huynh, Chanh: *See*—
Martel, Jacques, Huynh, Toromanoff, and Nomine. Re. 27,592.

Insto-Gas Corp.: *See*—
Power, Gerard. Re. 27,594.

Kennedy, Thomas E.: *See*—
Gondeck, Frederick V., Hickox, Kennedy, Perez, and Thompson. Re. 27,593.

Martel, Jacques, C. Huynh, E. Toromanoff, and G. Nomine, to Roussell, UCLAF. Process for the preparation of transchrysanthemumic acid. Re. 27,592, 3–6–73, Cl. 260—464.

Microdot Inc.: *See*—
Munse, Robert A. Re. 27,591.

Miklarz, Manfred, to Stubbe Maschinenfabrik GmbH. Control device for initiating the injecting process of injection molding machines. Re. 27,590, 3–6–73, Cl. 425—149.

Munse, Robert A., to Microdot Inc. Tool for assembling spring metal C-clips to panels. Re. 27,591, 3–6–73, Cl. 29—225.

Nomine, Gerard: *See*—
Martel, Jacques, Huynh, Toromanoff, and Nomine. Re. 27,592.

Perez, Arthur: *See*—
Gondeck, Frederick V., Hickox, Kennedy, Perez, and Thompson. Re. 27,593.

Power, Gerard, to Insto-Gas Corp. Tip-over shut-off for gas heaters. Re. 27,594, 3–6–73, Cl. 126—8.

Roussell, UCLAF: *See*—
Martel, Jacques, Huynh, Toromanoff, and Nomine. Re. 27,592.

Stubbe Maschinenfabrik GmbH: *See*—
Miklarz, Manfred. Re. 27,590.

Thompson, James F.: *See*—
Gondeck, Frederick V., Hickox, Kennedy, Perez, and Thompson. Re. 27,593.

Weitbrecht, R. H., Co.: *See*—
Weitbrecht, Robert H. Re. 27,595.

Weitbrecht, Robert H., to R. H. Weitbrecht Co. Frequency-shift teletypewriter. Re. 27,595, 3–6–73, Cl. 178—66.

LIST OF PLANT PATENTEES

Armstrong, David L., to Armstrong Nurseries, Inc. Rose plant. 3,314, 3–6–73, Cl. 20.

Armstrong, David L., to Armstrong Nurseries, Inc. Rose plant. 3,315, 3–6–73, Cl. 22.

Armstrong Nurseries, Inc.: *See*—
Armstrong, David L. 3,314.
Armstrong, David L. 3,315.

Yukawa, Teruo. Carnation plant. 3,316, 3–6–73, Cl. 73.

LIST OF DESIGN PATENTEES

Achenbach, Walter B., to Owens-Illinois, Inc. Beverage glass or similar article. 226,443, 3–6–73, Cl. D36—8.

Ajus, Camille A. and M. N. Garment pattern drafting stencil. 226,450, 3–6–73, Cl. D52—6.

Ajus, Marguerite N.: *See*—
Ajus, Camille A. and M. N. 226,450.

American Standard Inc.: *See*—
Anderson, Warren G. 226,432.

Anderson, Warren G., to American Standard Inc. Toilet tank. 226,432, 3–6–73, Cl. D23—66.

Banner Metals, Inc.: *See*—
Wilson, James D. 226,457.

Bartasevich, William E., Jr., and J. E. Edgell, to Disston, Inc. Hedge trimmer. 226,420, 3–6–73, Cl. D8—8.

Baugh, Benjamin C.: *See*—
May, Randall L., Baugh, and Deines. 226,448.

Beltramo, Renaldo M.: *See*—
Davidson, George L., and Beltramo. 226,454.

Bentley, Arthur G. Wheeled skate. 226,440, 3–6–73, Cl. D34—14.

Bolyn, Anthony E., and L. G. Collo, to Richardson-Merrell Inc. Syringe unit. 226,456, 3–6–73, Cl. D83—12.

Broward County School Board, The: *See*—
Matteson, David S. 226,438.

Bundy, Maurice G., to Optics, Inc. Surveillance camera. 226,453, 3–6–73, Cl. D61—1.

Carreiro, Julian A.; assignor to Angelo N. Giordano, and Joseph R. Raio, fractional part interest to each. Bowling equipment bag. 226,458, 3–6–73, D87—5.

Coker, Cliff J., to Norma J. Coker. Exersiser. 226,439, 3–6–73, Cl. D34—5.

Coker, Norma J.: *See*—
Coker, Cliff J. 226,439.

Coleman Co., Inc., The: *See*—
May, Randall L., Baugh, and Deines. 226,448.

Collo, Lloyd G.: *See*—
Bolyn, Anthony E., and Collo. 226,456.

Cooper, Howard. Bottle. 226,424, 3–6–73, Cl. D9—28.

Christen, Jack P., to Outers Laboratories, Inc. Bow string silencer. 226,429, 3–6–73, Cl. D22—5.

Davidson, George L., and R. M. Beltramo, to Tuttle, Inc. Flasher. 226,454, 3–6–73, Cl. D72—1.

Davis, Ward B., to Sterilizer Control Royalties. Color indicator device. 226,428, 3–6–73, Cl. D16—2.

Deines, Robert R.: *See*
May, Randall L., Baugh, and Deines. 226,448.

Disston, Inc.: *See*—
Bartasevich, William E., Jr., and Edgell. 226,420.

Douglas, Raymond J.: *See*—
Rees, Howard K., Douglas, Moquin, and Handler. 226,442.

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DESIGN PATENTS

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42 : 226,420
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44 : 226,422

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45 : 226,425
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48 : 226,451
55 : 226,429

PLANT PATENTS

6 : 3,314

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Frederick B. Dent, Secretary

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Robert Gottschalk, Commissioner